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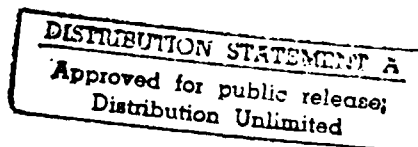
REPORT DOCUMENTATION P.GE		1. REPORT NO. DOD/SW/MT-88/011a	2.	3. Recipient's Accession No.
Title and Subtitle Version Description Document for the Ada Compiler Validation Capability (Version 1.10): BACKUP		5. Report Date		6.
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Sponsoring Organization Name and Address		14.		
15. Supplementary Notes For magnetic tape, see:				
16. Abstract (Limit: 200 words) The Ada Compiler Validation Capability (ACVC), Version 1.10, consists of 3719 tests in 4182 test files. Also, there are three units in four files and three tests in three files which support the running of the ACVC tests; one data file containing macro definitions; one program in one file for making the macro substitutions; and five programs in 165 files which are used to aid in the validation process. The differences between Version 1.9 and 1.10 are detailed in sections 2.0 through 4.0.				
17. Document Analysis a. Descriptors The ACVC is a suite of tests designed to test an Ada Compiler's Conformance to MIL-STD-1815A.				
b. Identifiers/Open-Ended Terms				
c. COSATI Field/Group				
18. Availability Statement:		19. Security Class (This Report)		21. No. of Pages
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(See ANSI-Z39.18)

See Instructions on Reverse

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Department of Commerce

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VERSION DESCRIPTION DOCUMENT
FOR THE
Ada COMPILER VALIDATION CAPABILITY
(Version 1.10)

1 VERSION IDENTIFICATION

This document describes the Ada Compiler Validation Capability (ACVC), Version 1.10. This version consists of 3719 tests in 4182 test files. Also, there are three units in four files and three tests in three files which support the running of the ACVC tests; one data file containing macro definitions; one program in one file for making the macro substitutions; and five programs in 165 files which are used to aid in the validation process. The differences between Version 1.9 and 1.10 are detailed in sections 2.0 through 4.0.

2 TEST MODIFICATIONS

In Version 1.10 of the ACVC, 384 tests were modified from the corresponding tests in Version 1.9. Modifications have been made:

- a) to correct tests that were found to be incorrect in previous versions of the ACVC,
- b) to strengthen the tests by making the tests more comprehensive or by incorporating more cases to check, and
- c) to bring test code into conformance with the coding standards.

The following tests have been modified from Version 1.9:

A28004A.ADA	A35902C.ADA	A74106C.ADA	AD1A01A.ADA
AE3101A.ADA	B22003A.ADA	B23003F.TST	B24204A.ADA
B24204B.ADA	B24204C.ADA	B28001J.ADA	B28001R.ADA
B28001S.ADA	B28001T.ADA	B28003A.ADA	B2A003A.ADA
B2A003B.ADA	B2A003C.ADA	B33301A.ADA	B36001A.ADA
B37201A.ADA	B37312B.ADA	B39004G.ADA	B39004J.ADA
B39004L.ADA	B44001A.ADA	B49006A.ADA	B49009A.ADA
B59001A.ADA	B64001A.ADA	B67001A.ADA	B67001B.ADA
B67001C.ADA	B67001D.ADA	B85013C.ADA	B86001B.ADA
B91001H.ADA	B91003B.ADA	B95001A.ADA	B97101A.ADA
B97101E.ADA	B97102C.ADA	B97102E.ADA	BC3105A.ADA
BC3604A.ADA	C32001B.ADA	C32111A.ADA	C32112A.ADA
C32112B.ADA	C32113A.ADA	C32115A.ADA	C34004A.ADA
C34007A.ADA	C34007D.ADA	C34007G.ADA	C34007M.ADA
C34007P.ADA	C34007S.ADA	C34012A.ADA	C35102A.ADA
C35502F.TST	C35502K.ADA	C35502N.DEP	C35502P.ADA
C35503C.ADA	C35503D.TST	C35503E.ADA	C35503F.TST
C35503G.ADA	C35503H.ADA	C35503K.ADA	C35503L.ADA
C35503O.ADA	C35503P.ADA	C35505C.ADA	C35507C.ADA
C35507E.ADA	C35507G.ADA	C35507H.ADA	C35507I.DEP



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Justification	
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Date Recd.	
Availability	
Date	
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C35507J.DEP	C35507K.ADA	C35507M.DEP	C35507N.DEP
C35508E.ADA	C35508G.ADA	C35508H.ADA	C35508J.DEP
C35508O.ADA	C35508P.ADA	C35703A.ADA	C35711B.ADA
C35802Y.DEP	C35802Z.DEP	C35904A.ADA	C35904B.ADA
C35A06N.ADA	C36204B.ADA	C36204C.ADA	C37107A.ADA
C37206A.ADA	C37207A.ADA	C37209B.ADA	C37213H.ADA
C37213J.ADA	C37215C.ADA	C37215E.ADA	C37215G.ADA
C37215H.ADA	C38102C.ADA	C39005A.ADA	C41307D.ADA
C41308C.ADA	C41320A.ADA	C41402A.ADA	C42007F.ADA
C42007G.ADA	C45242B.ADA	C45252B.ADA	C45273A.ADA
C45332A.ADA	C45532B.DEP	C45532F.DEP	C45532J.DEP
C45532N.DEP	C45614C.DEP	C45621G.DEP	C45621H.DEP
C45621I.DEP	C45621J.DEP	C45621K.DEP	C45621L.DEP
C45621M.DEP	C45621N.DEP	C45621O.DEP	C45621P.DEP
C45621Q.DEP	C45621R.DEP	C45621S.DEP	C45621T.DEP
C45621U.DEP	C45621V.DEP	C45621W.DEP	C45621X.DEP
C45621Y.DEP	C45621Z.DEP	C46014A.ADA	C47005A.ADA
C47008A.ADA	C47009A.ADA	C47009B.ADA	C4A012B.ADA
C52104L.ADA	C54A24B.ADA	C64103B.ADA	C64103E.ADA
C64103F.ADA	C64104A.ADA	C64104H.ADA	C64104I.ADA
C64104J.ADA	C64104K.ADA	C64104O.ADA	C64109H.ADA
C64109I.ADA	C64109J.ADA	C64109K.ADA	C64109L.ADA
C85018B.ADA	C87B04B.ADA	C87B06A.ADA	C87B19A.ADA
C94002G.ADA	C96001A.ADA	C97301B.ADA	C99004A.ADA
CC1221A.ADA	CC1311A.ADA	CC1311B.ADA	CC3603A.ADA
CE2102A.ADA	CE2102B.ADA	CE2102C.TST	CE2102D.ADA
CE2102E.ADA	CE2102F.ADA	CE2102G.ADA	CE2102H.TST
CE2102I.ADA	CE2102J.ADA	CE2102K.ADA	CE2103A.TST
CE2103B.TST	CE2104A.ADA	CE2104B.ADA	CE2104C.ADA
CE2104D.ADA	CE2105A.ADA	CE2105B.ADA	CE2106A.ADA
CE2106B.ADA	CE2107A.ADA	CE2107B.ADA	CE2107C.ADA
CE2107D.ADA	CE2107E.ADA	CE2107F.ADA	CE2107G.ADA
CE2107H.ADA	CE2107I.ADA	CE2108A.ADA	CE2108B.ADA
CE2108C.ADA	CE2108D.ADA	CE2109A.ADA	CE2109B.ADA
CE2109C.ADA	CE2110A.ADA	CE2110B.ADA	CE2110C.ADA
CE2111A.ADA	CE2111B.ADA	CE2111C.ADA	CE2111D.ADA
CE2111E.ADA	CE2111G.ADA	CE2111H.ADA	CE2115A.ADA
CE2115B.ADA	CE2201A.ADA	CE2201B.ADA	CE2201C.ADA
CE2201F.ADA	CE2201G.ADA	CE2201M.ADA	CE2202A.ADA
CE2204A.ADA	CE2208B.ADA	CE2401A.ADA	CE2401B.ADA
CE2401C.ADA	CE2401E.ADA	CE2401F.ADA	CE2401H.ADA
CE2402A.ADA	CE2404A.ADA	CE2405B.ADA	CE2406A.ADA
CE2407A.ADA	CE2408A.ADA	CE2409A.ADA	CE2410A.ADA
CE2411A.ADA	CE3002B.TST	CE3002C.TST	CE3102A.ADA
CE3102B.TST	CE3103A.ADA	CE3104A.ADA	CE3107A.TST
CE3108A.ADA	CE3108B.ADA	CE3109A.ADA	CE3110A.ADA
CE3111A.ADA	CE3111B.ADA	CE3111C.ADA	CE3111D.ADA
CE3111E.ADA	CE3112A.ADA	CE3112B.ADA	CE3114A.ADA
CE3114B.ADA	CE3115A.ADA	CE3206A.ADA	CE3208A.ADA

CE3301A.ADA	CE3302A.ADA	CE3303A.ADA	CE3305A.ADA
CE3402A.ADA	CE3402C.ADA	CE3402D.ADA	CE3402E.ADA
CE3403A.ADA	CE3403B.ADA	CE3403C.ADA	CE3403D.ADA
CE3403E.ADA	CE3403F.ADA	CE3404A.ADA	CE3404B.ADA
CE3404C.ADA	CE3405A.ADA	CE3405C.ADA	CE3405D.ADA
CE3406A.ADA	CE3406B.ADA	CE3406C.ADA	CE3406D.ADA
CE3407A.ADA	CE3407B.ADA	CE3407C.ADA	CE3408A.ADA
CE3408B.ADA	CE3408C.ADA	CE3409A.ADA	CE3409B.ADA
CE3409C.ADA	CE3409D.ADA	CE3409E.ADA	CE3410A.ADA
CE3410B.ADA	CE3410C.ADA	CE3410D.ADA	CE3410E.ADA
CE3411A.ADA	CE3411C.ADA	CE3412A.ADA	CE3413A.ADA
CE3413C.ADA	CE3601A.ADA	CE3602A.ADA	CE3602B.ADA
CE3602C.ADA	CE3602D.ADA	CE3603A.ADA	CE3604A.ADA
CE3605A.ADA	CE3605B.ADA	CE3605C.ADA	CE3605D.ADA
CE3605E.ADA	CE3606A.ADA	CE3606B.ADA	CE3701A.ADA
CE3704A.ADA	CE3704B.ADA	CE3704C.ADA	CE3704D.ADA
CE3704E.ADA	CE3704F.ADA	CE3704M.ADA	CE3704N.ADA
CE3704O.ADA	CE3706C.ADA	CE3706D.ADA	CE3706F.ADA
CE3706G.ADA	CE3707A.ADA	CE3708A.ADA	CE3801A.ADA
CE3804A.ADA	CE3804B.ADA	CE3804C.ADA	CE3804D.ADA
CE3804E.ADA	CE3804F.ADA	CE3804G.ADA	CE3804I.ADA
CE3804K.ADA	CE3804M.ADA	CE3805A.ADA	CE3805B.ADA
CE3806A.ADA	CE3806C.ADA	CE3806D.ADA	CE3806E.ADA
CE3809A.ADA	CE3809B.ADA	CE3810A.ADA	CE3901A.ADA
CE3905A.ADA	CE3905B.ADA	CE3905C.ADA	CE3905L.ADA
CE3906A.ADA	CE3906B.ADA	CE3906C.ADA	CE3906D.ADA
CE3906E.ADA	CE3906F.ADA	CE3908A.ADA	E28005C.ADA

In addition, the following support files and tests for support files were modified for Version 1.10:

MACRO.DFS	REPSPEC.ADA	REPBODY.ADA	CZ1101A.ADA
CZ1102.ADA			

3 TEST DELETIONS

The following 26 tests appear in ACVC Version 1.9, but not in ACVC Version 1.10. Several of the deleted tests were renamed to new test names in ACVC 1.10 to conform to the naming conventions provided by the Implementer's Guide or to reflect a change in test class.

A37312A.ADA	A41307A.ADA	A41307C.ADA	B33006B.ADA
B34001S.ADA	B86001C.DEP	B86001D.TST	B97102A.ADA
BC10AGA.ADA	C35A03E.ADA	C35A03R.ADA	C900ACA.ADA
C910BDA.ADA	C910BDB.ADA	C950CHC.ADA	CE2210A.ADA
CE3203A.ADA	CE3301B.ADA	CE3301C.ADA	CE3402B.ADA
CE3405B.ADA	CE3409F.ADA	CE3410F.ADA	CE3412C.ADA
E24101A.TST	E66001D.ADA		

4 NEW TESTS

The following 623 tests have been added to Version 1.10 of the ACVC Test Suite. A test is considered "new" if the test name did not exist in ACVC Version 1.9. Several of the new tests were renamed from former tests in ACVC Version 1.9 to conform to the naming conventions provided by the Implementer's Guide or to reflect a change in test class.

A98001A.ADA	AD1009M.DEP	AD1009V.DEP	AD1009W.DEP
AD1C04D.DEP	AD3014C.DEP	AD3014F.DEP	AD3015C.DEP
AD3015F.DEP	AD3015H.DEP	AD3015K.DEP	AD7001B.ADA
AD7005A.ADA	AD7006A.ADA	AD7101A.ADA	AD7101C.ADA
AD7102A.ADA	AD7103A.ADA	AD7103C.ADA	AD7104A.ADA
B22003B.ADA	B24204D.ADA	B24204E.ADA	B24204F.ADA
B2A003D.ADA	B2A003E.ADA	B2A003F.ADA	B33002A.ADA
B33301B.ADA	B34005B.ADA	B34005E.ADA	B34005H.ADA
B34005K.ADA	B34005N.ADA	B34005Q.ADA	B34005T.ADA
B34006B.ADA	B34006E.ADA	B34006H.ADA	B34006K.ADA
B34014B.ADA	B34014D.ADA	B34014F.ADA	B34014I.ADA
B34014K.ADA	B34014M.ADA	B34014O.ADA	B34014Q.ADA
B34014S.ADA	B34014V.ADA	B34014X.ADA	B34014Z.ADA
B37201B.ADA	B37212B.ADA	B41307B.ADA	B44001B.ADA
B64001B.ADA	B64110A.ADA	B66001D.ADA	B67001H.ADA
B67001I.ADA	B67001J.ADA	B67001K.ADA	B85013D.ADA
B86001C.ADA	B86001D.ADA	B86001E.ADA	B86001F.ADA
B86001G.ADA	B86001H.ADA	B86001I.ADA	B86001J.ADA
B86001K.ADA	B86001L.ADA	B86001M.ADA	B86001N.ADA
B86001O.ADA	B86001P.ADA	B86001Q.ADA	B86001R.ADA
B86001S.ADA	B86001T.DEP	B86001U.DEP	B86001V.DEP
B86001W.DEP	B86001X.TST	B86001Y.TST	B86001Z.TST
B91003E.ADA	B95001C.ADA	B95069D.ADA	B95069E.ADA
B97101G.ADA	B97101H.ADA	BC3102C.ADA	BC3123C.ADA
BD5001A.ADA	BD5002A.ADA	BD5002B.ADA	BD5002C.ADA

BD5002D.ADA	BD5002E.ADA	BD5002F.ADA	BD5005B.ADA
BD5006B.ADA	BD5006C.ADA	BD5006D.ADA	BD5006J.ADA
BD5008A.ADA	BD5101A.ADA	BD5101B.ADA	BD5102A.ADA
BD5103A.ADA	BD5104A.ADA	BE3301C.ADA	C32111B.ADA
C32115B.ADA	C34004C.ADA	C34005A.ADA	C34005C.ADA
C34005D.ADA	C34005F.ADA	C34005G.ADA	C34005I.ADA
C34005J.ADA	C34005L.ADA	C34005M.ADA	C34005O.ADA
C34006A.ADA	C34006D.ADA	C34006F.ADA	C34007J.ADA
C34009A.ADA	C34014A.ADA	C34014C.ADA	C34014E.ADA
C34014G.ADA	C34014H.ADA	C34014J.ADA	C34014L.ADA
C34014N.ADA	C34014P.ADA	C34014R.ADA	C34014T.ADA
C34014U.ADA	C34014W.ADA	C34014Y.ADA	C35505E.ADA
C35505F.ADA	C35A06O.ADA	C35A06P.ADA	C35A06Q.ADA
C35A06R.ADA	C35A06S.ADA	C37213K.ADA	C37213L.ADA
C37312A.ADA	C41307A.ADA	C41307C.ADA	C41309A.ADA
C91004B.ADA	C91004C.ADA	C95040B.ADA	C98001B.ADA
C98001C.ADA	CC1221B.ADA	CC1221C.ADA	CC1221D.ADA
CC1223A.ADA	CC3123A.ADA	CC3123B.ADA	CC3125B.ADA
CC3125C.ADA	CC3125D.ADA	CC3126A.ADA	CC3127A.ADA
CC3220A.ADA	CC3221A.ADA	CC3222A.ADA	CC3223A.ADA
CC3606A.ADA	CD1009A.DEP	CD1009B.DEP	CD1009C.DEP
CD1009D.DEP	CD1009E.DEP	CD1009F.DEP	CD1009G.DEP
CD1009H.DEP	CD1009I.DEP	CD1009J.DEP	CD1009K.DEP
CD1009L.DEP	CD1009N.DEP	CD1009O.DEP	CD1009P.DEP
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CD1009U.DEP	CD1009X.DEP	CD1009Y.DEP	CD1009Z.DEP
CD1C03A.DEP	CD1C03B.ADA	CD1C03C.TST	CD1C03E.DEP
CD1C03F.DEP	CD1C03G.DEP	CD1C03H.DEP	CD1C03I.ADA
CD1C04A.DEP	CD1C04B.DEP	CD1C04C.DEP	CD1C04E.DEP
CD1C06A.DEP	CD1D01A.ADA	CD1D01B.ADA	CD1D01C.ADA
CD1D01D.ADA	CD1D02A.ADA	CD1D03A.ADA	CD2A21A.DEP
CD2A21B.DEP	CD2A21C.DEP	CD2A21D.DEP	CD2A21E.DEP
CD2A22A.DEP	CD2A22B.DEP	CD2A22C.DEP	CD2A22D.DEP
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CD2A24B.DEP	CD2A24C.DEP	CD2A24D.DEP	CD2A24E.DEP
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CD2A24J.DEP	CD2A31A.DEP	CD2A31B.DEP	CD2A31C.DEP
CD2A31D.DEP	CD2A32A.DEP	CD2A32B.DEP	CD2A32C.DEP
CD2A32D.DEP	CD2A32E.DEP	CD2A32F.DEP	CD2A32G.DEP
CD2A32H.DEP	CD2A32I.DEP	CD2A32J.DEP	CD2A41A.DEP
CD2A41B.DEP	CD2A41C.DEP	CD2A41D.DEP	CD2A41E.DEP
CD2A42A.DEP	CD2A42B.DEP	CD2A42C.DEP	CD2A42D.DEP
CD2A42E.DEP	CD2A42F.DEP	CD2A42G.DEP	CD2A42H.DEP
CD2A42I.DEP	CD2A42J.DEP	CD2A51A.DEP	CD2A51B.DEP
CD2A51C.DEP	CD2A51D.DEP	CD2A51E.DEP	CD2A52A.DEP
CD2A52B.DEP	CD2A52C.DEP	CD2A52D.DEP	CD2A52G.DEP
CD2A52H.DEP	CD2A52I.DEP	CD2A52J.DEP	CD2A53A.DEP
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CD2A54A.DEP	CD2A54B.DEP	CD2A54C.DEP	CD2A54D.DEP
CD2A54G.DEP	CD2A54H.DEP	CD2A54I.DEP	CD2A54J.DEP

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CD2A81E.TST	CD2A81F.TST	CD2A81G.TST	CD2A83A.TST
CD2A83B.TST	CD2A83C.TST	CD2A83E.TST	CD2A83F.TST
CD2A83G.TST	CD2A84B.DEP	CD2A84C.DEP	CD2A84D.DEP
CD2A84E.DEP	CD2A84F.DEP	CD2A84G.DEP	CD2A84H.DEP
CD2A84I.DEP	CD2A84K.DEP	CD2A84L.DEP	CD2A84M.DEP
CD2A84N.DEP	CD2A87A.TST	CD2A91A.TST	CD2A91B.TST
CD2A91C.TST	CD2A91D.TST	CD2A91E.TST	CD2A95A.TST
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CD5014G.DEP	CD5014H.DEP	CD5014I.DEP	CD5014J.DEP
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CD5014U.DEP	CD5014V.DEP	CD5014W.DEP	CD5014X.DEP
CD5014Y.DEP	CD5014Z.DEP	CD7003A.TST	CD7004A.TST
CD7004C.TST	CD7004D.TST	CD7005B.TST	CD7005E.TST

CD7006B.TST	CD7006E.TST	CD7007B.ADA	CD7007C.TST
CD7101B.TST	CD7101D.ADA	CD7101E.DEP	CD7101F.DEP
CD7101G.TST	CD7102B.TST	CD7103B.TST	CD7103D.TST
CD7104B.TST	CD7105A.ADA	CD7203B.ADA	CD7204B.ADA
CD7204C.DEP	CD7205C.DEP	CD7205D.DEP	CE2102L.ADA
CE2102M.ADA	CE2102N.ADA	CE2102O.ADA	CE2102P.ADA
CE2102Q.ADA	CE2102R.ADA	CE2102S.ADA	CE2102T.ADA
CE2102U.ADA	CE2102V.ADA	CE2102W.ADA	CE2102X.ADA
CE2102Y.ADA	CE2103C.ADA	CE2103D.ADA	CE2107L.ADA
CE2108E.ADA	CE2108F.ADA	CE2108G.ADA	CE2108H.ADA
CE2110D.ADA	CE2111F.ADA	CE2111I.ADA	CE2201H.ADA
CE2201I.ADA	CE2201J.ADA	CE2201K.ADA	CE2201L.ADA
CE2201M.ADA	CE2201N.ADA	CE2204C.ADA	CE2204D.ADA
CE2205A.ADA	CE2401I.ADA	CE2401J.ADA	CE2401K.ADA
CE2401L.ADA	CE2404B.ADA	CE2407B.ADA	CE2408B.ADA
CE2409B.ADA	CE2410B.ADA	CE3102D.ADA	CE3102E.ADA
CE3102F.ADA	CE3102G.ADA	CE3102H.ADA	CE3102I.ADA
CE3102J.ADA	CE3102K.ADA	CE3104B.ADA	CE3104C.ADA
CE3107B.ADA	CE3112C.ADA	CE3112D.ADA	CE3404D.ADA
CE3411B.ADA	CE3604B.ADA	CE3801B.ADA	CE3804H.ADA
CE3804J.ADA	CE3804L.ADA	CE3804N.ADA	CE3804O.ADA
CE3804P.ADA	CE3806B.ADA	CE3806F.ADA	CE3806G.ADA
CE3806H.ADA	CE3810B.ADA	E24201A.TST	ED1D04A.DEP
ED2A26A.DEP	ED2A56A.DEP	ED2A86A.TST	ED7004B.TST
ED7005C.TST	ED7005D.TST	ED7006C.TST	ED7006D.TST
EE3203A.ADA	EE3301B.ADA	EE3402B.ADA	EE3405B.ADA
EE3409F.ADA	EE3410F.ADA	EE3412C.ADA	

In addition, one new support unit (in one file), a system of programs (in 165 files) designed to aid in the validation process, and a macro substitution program have been added to ACVC Version 1.10:

SPPRT13.ADA	(The specification of a package whose body must be provided by the user.)
AVAT	(One package in files DATSPEC.ADA and DATBODY.ADA; all other units in files whose names have the form "AVAT%%.ext" where each % is replaced by a letter or digit and "ext" is either "ADA" or "TST".)
MACROSUB	A program which modifies the "TST" tests inserting the values supplied in the file MACRO.DFS. MACRO.DFS must be modified to reflect the implementation dependent values of the compiler.

ACVC 1.10 Tape Information

1 INTRODUCTION

The ACVC 1.10 test files are written on one tape volume in VAX VMS BACKUP format. One of the files on this tape is ACVC10.LST, which contains the names of all tests in the ACVC test suite.

2 TAPE FORMAT

This tape was written using the BACKUP utility on a VAX-11/780. The VAX command to read this tape is

```
$ BACKUP/LOG MF:ACVC10.BCK/SAVESET [directory where you want the tests]*.*.*
```

Note: MF: is the logical name for the tape drive.

3 TEST MODIFICATIONS

The Ada tests will be periodically updated and corrected. Their correctness is not guaranteed either by the ACVC Maintenance Organization (AMO) or by its contractor. Please report errors in writing to

Mr. Steven P. Wilson
ACVC Maintenance Organization
ASD/SCOL
Wright-Patterson AFB, OH 45433-6503

You will receive notification of changes to this version on a periodic basis. Please notify the AMO of any change of address.

1 Scope.

1.1 Identification.

This is the Ada Compiler Validation Capability (ACVC) User's Guide. This document details the use of Version 1.10 of the ACVC.

1.2 Purpose.

This user's guide describes the ACVC test suite, its use, and interpretation of the test results. It should be read by anyone who wishes to use the ACVC to test an implementation of the Ada language.

1.3 Introduction.

The primary purpose of the ACVC is to help decide whether an Ada translator/compiler conforms to ANSI/MIL-STD-1815A, the Reference Manual for the Ada Programming Language (RM). The RM is also known as the Ada Standard. The ACVC is maintained by the ACVC Maintenance Organization (AMO) under the direction of the Ada Validation Office (AVO) of the Air Force's Ada Joint Program Office (AJPO). The three main components of the ACVC are:

- . An implementers' guide that describes the implementation implications of the RM and the conditions that are checked by each validation test program.
- . A suite of validation test programs that are submitted to a compiler.
- . Validation support tools that assist in determining system capabilities, preparing tests for compilation, and analyzing the results of execution.

2 References.

1. ANSI/MIL-STD-1815A (The Reference Manual for the Ada Programming Language), 22 January 1983.
2. Ada Compiler Validation Procedures and Guidelines, Ada Joint Program Office, 1 January 1987.
3. Ada Compiler Validation Capability Implementers' Guide, SofTech, Inc., 1 December 1986.
4. ACVC Version 1.10 Version Description Document, SofTech, Inc., 1 December 1987.

5. ACVC Test Design and Coding Standards, SofTech, Inc.,
1 December 1986.

3 Instruction For Use.

3.1 Ada Compiler Validation Capability Implementers' Guide.

All of the ACVC test programs are based on objectives given in the Ada Compiler Validation Capability Implementers' Guide (AIG). The AIG basically follows the RM. However, the AIG contains additional sections which further clarify the rules of the language, details the interpretation of any ambiguities in the RM, and presents objectives and guidelines for the tests.

3.2 Validation Test Programs.

The ACVC test suite is composed of various test programs designed to ensure that a compiler correctly conforms to all aspects of the RM. The test suite also attempts to ensure that the implementation does not add any illegal extensions to the language.

The goals of the ACVC include:

- . Maximizing the amount of information derived from a validation attempt; in particular, identifying as many nonconformances as possible.
- . Minimizing the effort needed to test a compiler; in particular, the effort needed to a) adapt the tests to a particular compiler environment, and b) determine which tests passed and which failed.
- . Minimizing the effort needed to determine if a test is correct (that is, if it uses an appropriate algorithm to check the objective) when failed on a compiler.
- . A thorough coverage of the language and the possible implementations of its features.
- . Making the tests understandable and maintainable.

3.2.1 Test Naming Conventions.

Test names have the form <name>.<type>. The <name> component is composed of seven to nine characters. The interpretation of each character is described below, where the first column indicates the character position(s) and the second column gives the corresponding meaning:

- | | |
|------|--|
| 1 | Test classification (letter) - identifies the class of the test (see Classifications). |
| 2 | AIG chapter (hexadecimal) - identifies the chapter which contains the objective being tested. |
| 3 | Section (hexadecimal) - identifies the section within the above chapter. |
| 4 | Sub-section (alpha-numeric) - identifies the sub-section within the above section. |
| 5, 6 | Test objective (decimal) - identifies the objective, within the above sub-section, being tested. |
| 7 | Sub-objective (letter) - indicates a sub-objective of the above objective. |
| 8 | Compilation sequence (alpha-numeric) - indicates the compilation order of multiple files that comprise a single test (0 is compiled first). This position is present only if the test is composed of multiple files. |
| 9 | Main subprogram indication (character 'M') - indicates which file of a test set contains the main procedure. This position is present only for one file of a multi-file test. |

The <type> component is a three-character extension which identifies the type of the test (see Type Extensions).

Characters 2-7 of the <name> component uniquely identify every test objective. Each individual objective has only a single classification and type designation associated with it. The classification and type of a test indicates its expected compilation/execution results.

3.2.1.1 Classifications.

The test classifications are A, B, C, D, E, and L. Tests that come under classes A, C, D, and E are also considered executable tests.

3.2.1.1.1 Class A.

Class A tests ensure acceptance (compilation) of certain language constructs which cannot be verified at run time. There are no testing conditions within them. These tests are expected to execute successfully - they simply report 'PASSED'. An implementation is considered to have failed any test for which it does not indicate otherwise.

3.2.1.1.2 Class B.

Class B tests check that illegal constructs are caught and that there are no illegal extensions to the language. These tests are expected to fail compilation. They are graded as 'PASSED' if all of the indicated errors in the test are caught and no legal constructs are rejected. An implementation is considered to have failed any test for which an error is not caught or a legal construct is rejected.

Lines containing errors which must be caught are marked '-- ERROR:'. This error comment may also include a very brief indication of what makes the construct illegal. Lines containing legal constructs which must be accepted are marked '-- OK.'.

The following rules apply in satisfying the pass criteria:

- . The compiler rejects a test which contains only a single error.
- . The compiler displays an error message for all of the '-- ERROR:' indications in a test with multiple errors.
- . All lines marked '-- OK.' are accepted.
- . Split tests can be created (see Modifying Tests).

3.2.1.1.3 Class C.

Class C tests check the run-time system and ensure that verifiable constructs are implemented correctly. These tests are expected to execute. The tests will indicate either 'PASSED', 'FAILED', or 'NOT APPLICABLE' based on the conditions tested. An implementation is considered to have failed any test for which it does not indicate otherwise.

3.2.1.1.4 Class D.

Class D tests are capacity tests. These tests are expected to execute successfully if no errors are reported during compilation. If an error is reported during compilation, it must be an error associated with the capacity being tested, in which case the test is considered inapplicable. Otherwise, an implementation may be considered to have failed any test for which it does not indicate differently; such failure should be reported to the AVO for a ruling.

3.2.1.1.5 Class E.

Class E tests check implementation-dependent options and the resolution of ambiguities in the RM. These tests are expected to execute successfully. Tests which execute print comments to indicate how the options or ambiguities are handled. The source code for each test lists specific pass/fail criteria. For some tests, these criteria are indicated

at execution time. These criteria are compared to the comments to make a grading determination. An implementation is considered to have failed any test for which it does not indicate otherwise.

3.2.1.1.6 Class L.

Class L tests ensure that all library unit dependencies within a program are satisfied before said program can be linked and executed, and that circularity among units is not allowed. These tests are expected to fail at link time; however, failure to compile may be acceptable for some implementations. These tests are graded as 'PASSED' if they do not successfully complete the link phase. Any test which begins execution is graded as 'FAILED'.

For tests which might possibly fail at compile time, the lines containing the illegal constructs are marked '-- ERROR:'.

3.2.1.2 Type Extensions.

The type extensions and their meanings are:

ADA - These tests check the standard features of the language that must be implemented by all compilers. They are expected to be compiled/executed unmodified and must be successfully processed by all implementations.

DEP - These tests involve optional, implementation-dependent features of the language. Each test concerned with supported features must be successfully processed as indicated by its classification. Tests concerned with unsupported features are considered inapplicable, provided they are processed as described below:

- . Class B tests should be successfully compiled.
- . Executable tests must be rejected at compile time as described in the test's applicability criteria.

TST - These tests also check implementation-dependent features of the language. They contain macros for the substitution of certain implementation-dependent values (see Macro Substitutions). Generally, each of these tests is expected to be successfully processed as indicated by its classification. However, some of the tests may be concerned with unsupported features and therefore are treated as described for DEP tests.

3.2.2 Coding Standards.

To help meet the goals of the ACVC, certain coding standards are followed.

3.2.2.1 General.

Some general test writing standards include:

- . Tests are written using the basic 55-character character-set (26 capital letters, 10 digits, and 19 punctuation marks).
- . Maximum line length is 72 characters, except as noted in certain DEP and TST tests.
- . Numeric values are generally in the range (-128..127). However, if necessary, they can be within the range (-2048..2047), a maximum of 12 bits.
- . Tests are written using as few Ada features as are necessary to write a self-checking executable test that is not too difficult to read or modify.

To help ensure a thorough coverage of the language, and to promote understandability and maintainability, many objectives are divided into sub-objectives, with some checked in a single test file and others checked in separate test files. For example, if a test objective is concerned with some property of scalar types, then individual subtests check:

- . INTEGER, CHARACTER, BOOLEAN, and a user-defined enumeration type, all in one test file since we expect all of these types to be implemented.
- . FLOAT and a user-defined floating-point type in a separate test file.
- . A fixed-point type in another separate test file.

Sub-objectives which are difficult to test are also tested in separate tests files.

3.2.2.2 Header Format.

The following header is placed at the beginning of all new and modified tests:

```
-- filename.  
-- OBJECTIVE:  
.  
.  
-- SEPARATE FILES:  
.  
.  
-- APPLICABILITY CRITERIA:  
.
```

```

.
.
-- PASS/FAIL CRITERIA:
.
.

```

```

-- MACRO SUBSTITUTIONS:
.
.

```

```

-- HISTORY:

```

```

--      ccc mm/dd/yy  comment about change.
.
.

```

The purpose of each section is:

filename	- identical to the actual name of the file.
objective	- describes the test's objective and explains the exact conditions or sub-objectives presently being tested.
separate files	- identifies all of the component files of a multiple file test, with a brief description of each file.
applicability criteria	- details under what conditions the test can be ruled inapplicable.
pass/fail criteria	- explains how to interpret the run-time results for grading the test.
macro substitution	- identifies the macros in the test which must be substituted and a brief description of what the replacement value represents.
history	- details who has made changes to the test, when, and what those changes were.

The file name, objective and history sections are always present. The separate files, applicability criteria, pass/fail criteria and macro substitutions sections are present only for tests which have such conditions.

3.2.2.3 Test Body Format.

Note: test body refers to the code which is compiled/executed and is not necessarily synonymous with an Ada unit body.

The names of all library units correspond to the name of the test to which they are associated.

Class B tests are generally library procedures. Other units are used when required by the objective, in which case there is not necessarily a main subprogram.

The main subprogram of all executable tests is a procedure. The name of this procedure is identical to the name of the test.

3.2.2.3.1 Test Initialization/Reporting And Test Objective Blocks.

The test body of an executable test has the following logical execution sequence:

1. Call to REPORT.TEST, which prints the test identifier and description.
2. Elaboration of objective-related declarations.
3. Testing of the objective - calls to REPORT.FAILED and REPORT.NOT_APPLICABLE as appropriate.
4. Call to REPORT.RESULT, which prints the pass/fail message.

The tests generally consist of a single procedure with the objective being tested within an inner DECLARE block. If the test objective is divided into multiple sub-objectives, each sub-objective is tested within a separate DECLARE block. For objectives which require packages as library units, package declarations and elaborations are arranged to result in the previously described execution sequence.

3.2.2.3.2 Ada Unit Bodies.

The format of the statements and language constructs is designed to make the syntactic and semantic structure of the test program apparent. In an attempt to defeat high-quality optimizing compilers, which may execute or remove the critical portion of a test at compile time, certain coding practices have been devised. These practices include calling identity functions, using objects in statements which appear to have no significance, and using IF-THEN-ELSE statements instead of just a simple IF statement.

3.2.3 Macro Substitutions.

TST type tests contain macros which represent implementation-dependent characteristics of the language. The macros are given as identifiers which begin with a dollar sign (\$). Each macro must be replaced with an appropriate textual value to make the tests suitable for compilation.

The substitutions can be done automatically by using the MACROSUBS program distributed with the ACVC. This program will request the replacement value for each macro and then edit all the TST tests in the suite to make the substitution.

Appendix A contains a description of all of the macros used in the test suite.

3.2.4 Processing The ACVC Test Programs.

Processing of the test suite consists of:

1. Compiling class B tests.
2. Compiling and linking class L tests.
3. Compiling, linking, and executing class A, C, D, and E tests.

It is recommended that the suite be processed by chapter. Generally, the test suite is processed within a single program library which must be initialized as described below.

3.2.4.1 Prerequisites.

The following prerequisites must be met before processing the test suite:

1. All of Ada must be implemented - the test suite attempts to cover the entire Ada language.
2. The support package REPORT must be compiled, checked out, and loaded into the program library (see Package Report).
3. The support procedure CHECKFILE must be compiled, checked out, and loaded into the program library (see Procedure Checkfile).
4. The support package SPPRT13 must be compiled and loaded into the program library (see Package Spprt13).

3.2.4.2 Dependencies Among Tests.

Test files which use character position 8 (compilation sequence) in their names have an inherent dependency. These test files must be compiled successively and, for class A, C, D, E, and L tests, linked together.

Some of the executable file I/O tests create a data file that is to be used by a subsequent test. In these instances, the tests must be run in sequence, without deleting the data file that was created. The tests which create such a file, and the tests that depend on that file are:

CE2108A must be followed by CE2108B.
CE2108C must be followed by CE2108D.
CE3112A must be followed by CE3112B.

3.2.4.3 Test Applicability.

Certain tests in the suite are concerned with optional, implementation-dependent features of the language. Hence, some of these tests may not be applicable to all implementations. The applicability of each test is based on the criteria given in the test file. The handling of tests concerned with unsupported features is described above under Type Extensions.

For executable tests, lines containing these implementation-dependent features are marked "-- NA => ERROR.". If an implementation does not support the specified feature, then these constructs must be rejected. If the constructs so indicated are rejected, then the test is considered inapplicable - any other errors reported are ignored. If the constructs so indicated are not rejected, then the test remains applicable and must execute successfully.

All the implementation-dependent tests are compiled, and executed if compiled successfully, during a validation attempt - except those tests which require a floating-point DIGITS value that exceeds SYSTEM.MAX DIGITS. All results for a particular feature must be consistent (i.e., all 'PASSED' or all 'NOT-APPLICABLE').

Appendix B contains the test applicability criteria for all the implementation-dependent tests.

3.2.4.4 Test Disputes.

The Certification Body has defined "dispute" to mean:

For the purposes of validation, a dispute is constituted by any behavior of the candidate Ada implementation that is not explicitly permitted by the code of the ACVC tests, by the documentation from the AMO that accompanies the ACVC tapes, or by other documentation provided to the vendor by the Ada Validation Facility (AVF).

Disputes must be brought to the attention of the AVF as soon as possible so that they can be resolved by the AVF and AVO. A dispute related to a validation attempt should be sent to the AVF handling the validation. Other disputes of ACVC tests can be sent to the AMO.

3.2.4.5 Guidelines For Modifying Tests.

It is expected that some tests will require modifications of code, processing, or evaluation in order to compensate for legitimate implementation behavior. Modifications are made with the approval of the AVO, and are made in cases where legitimate implementation behavior prevents the successful completion of an (otherwise) applicable test. Examples of such modifications include:

- . Adding a length clause to alter the default size of a collection.
- . Creating split tests.
- . Confirming that messages produced by an executable test demonstrate conforming behavior that wasn't anticipated by the test (such as raising one exception instead of another).

No original test can be modified; copies must be made. It is recommended that the copies be named by appending an alpha-numeric character to the <name> portion of the original test file. If possible, the line numbers of the original test should remain intact.

Split tests can be created for class B and L tests. Split tests have certain lines commented out to facilitate catching any previously undetected errors. Split tests can also be used to ensure that all legal constructs are passed.

3.3 Validation Support Tools.

The following validation tools are used to a) provide additional information about an implementation, and b) reduce the effort required to perform a validation attempt.

3.3.1 The Ada Validation Assistant Tool.

3.3.1.1 Description.

The Ada Validation Assistant Tool (AVAT) is a set of five programs that test implementation-dependent features and produce lists of possibly inapplicable tests. Although it is not part of the test suite, the AVAT system can assist in the validation process by providing information about the implementation.

AVAT attempts to determine whether certain features of the language are supported by the implementation. These features include predefined types other than those required by the language and certain forms of representation clauses. AVAT also attempts to measure the degree to which some features are supported, including fixed- and floating-point precision, and compilation of generic specifications and bodies in separate files. Finally, AVAT reports the values of many implementation-dependent values, including integer type bounds, real type accuracies and ranges, and the constants declared in the package SYSTEM.

For the features of the language that are not (fully) supported, the AVAT programs report lists of ACVC tests that might be inapplicable due to the lack of (full) support. These lists may not be complete; that is, there may be unlisted tests which are inapplicable due to an implementation's lack of support for a particular feature. Likewise, the lists may not be entirely accurate for a particular implementation; that is, due to implementation decisions not anticipated by AVAT's designers, a test may be listed when it is actually applicable to the implementation. The final determination of the applicability of a test depends on the specific criteria given in the text of the test, the agreement of test

results with the vendor's documentation, and, in some cases, the vendor's explanation of unusual test results. It is the vendor's responsibility to reconcile any inconsistencies; for validation purposes, justification of inconsistencies must be provided to the AVF in the form of a test dispute.

Each AVAT program consists of a data collection and reporting package (common to the five AVAT programs), a number of auxiliary library procedures, and a main procedure which imports the package and invokes the auxiliary procedures. Some of the auxiliary procedures simply provide section headers for the report, and others provide the values of system-defined constants. The remaining procedures (the majority) are used to determine whether specific language features are supported. There are two or more versions of each such procedure. For example, the procedure which tests for support of 'SIZE clauses for integer types occurs in four versions. The first version contains no 'SIZE clauses; if it is executed, it stores (in a structure declared in the package) a message that 'SIZE clauses are not supported for integer types, and a list of ACVC tests that are therefore potentially inapplicable. The second version contains a 'SIZE clause specifying the implementation's default size; if it executes, it stores a message that only default size specifications are accepted, and a corresponding list of potentially inapplicable ACVC tests. Likewise, the third and fourth versions contain intermediate and minimal size specifications and store corresponding messages and lists of tests. The four versions of the procedure must be submitted to the compiler in the given order. The last one to successfully compile will be the version invoked when the main program executes; thus the appropriate message and test list will be reported.

The AVAT programs are organized as follows:

COMMON PACKAGE

DATA COLLECTION

This package collects and reports the messages and lists of potentially inapplicable tests.

Specification
Body

DATSPEC.ADA
DATBODY.ADA

PART ONE

AVATNUM

This program reports on numeric type declarations and characteristics.

Main procedure

AVATNUM.ADA

Auxiliary procedures

AVAT000.ADA .. AVAT006.ADA
AVAT007.TST
AVAT008.ADA .. AVAT012.ADA
AVAT013.TST
AVAT014.ADA
AVAT015.TST
AVAT016.ADA .. AVAT026.ADA

PART TWO AVATLEN

This program reports on the support for length clauses.

Main procedure AVATLEN.ADA
 Auxiliary procedures AVAT100.ADA .. AVAT134.ADA
 AVAT135.TST
 AVAT136.ADA
 AVAT137.TST
 AVAT138.ADA .. AVAT154.ADA

PART THREE AVATREP

This program reports on the support for enumeration and record representation clauses and address clauses. Some of the auxiliary procedures in this program depend on the support package SPPRT13.

Main procedure AVATREP.ADA
 Auxiliary procedures AVAT200.ADA .. AVAT227.ADA

PART FOUR AVATGEN

This program reports on the support for separate compilation of generic specifications, bodies, and subunits, and for file I/O.

Main procedure AVATGEN.ADA
 Auxiliary procedures AVAT300.ADA .. AVAT335.ADA

PART FIVE AVATSTD

This program reports the values of constants and type characteristics in the packages STANDARD and SYSTEM.

Main procedure AVATSTD.ADA
 Auxiliary procedures AVAT400.ADA .. AVAT411.ADA

3.3.1.2 Compilation.

The five programs that make up AVAT may be processed in any order; however, the order of compilation within each program is crucial. The specification of package DATACOLLECTION must be compiled as the first unit in each program; the body, of course, may be compiled at any subsequent time before the link step. The auxiliary procedures must be compiled after the package and before the main procedure, since they import the package and the main procedure imports the auxiliary procedures. It is especially important to note that the auxiliary procedures must be compiled in the order given by their file names, since the success of the programs depends on the required library management. Note that this compilation order requirement prohibits the use of any sort of concurrent or interleaved compilation, including the use of batch queues with more than one job running at the same time.

3.3.1.3 Interpretation Of Results.

When the five AVAT programs execute, they report the values of implementation-dependent constants, report that certain features are (are not) supported, and produce lists of tests which are potentially inapplicable due to the apparent lack of support of certain features. The reports should be read and carefully considered in light of the system documentation and known implementation decisions. The lists of potentially inapplicable tests serve as a guide in determining applicability, but final decisions are made on the basis of test behavior, test-specific applicability criteria, and consistency with documentation.

3.3.2 Library Support Units.

The following library support units must be compiled and loaded into the program library that is used when compiling and linking the ACVC tests.

3.3.2.1 Reporting Test Results.

3.3.2.1.1 Package Report.

All executable tests use the REPORT support package. This package contains routines to 1) automate reporting of test results and 2) help prevent optimizing out any test code. Automation of reporting test results is accomplished with a set of procedures which identify the test and indicate its result. Optimization is defeated with a set of identity functions.

Package REPORT uses most of the Ada features used throughout the test suite, namely:

```
type INTEGER,    literals, +, -, relations, :=
type CHARACTER, literals, &, relations, :=
type STRING,    literals, &, relations, :=
type BOOLEAN,   literals, AND, OR, NOT, relations, :=
```

user-defined enumeration type, literals, relations, :=

object declarations (and initialization) for the above types.

subprogram declarations, bodies, and calls, with formal parameters of all modes and of the above types.

IF statements.

Executable tests generally follow the format:

```
WITH REPORT; USE REPORT;
PROCEDURE Testname IS
...
BEGIN
```

```

TEST ("Testname", "Description ...");
...
IF ... /= CorrectValue THEN
    FAILED ("Reason");
END IF;
...
RESULT;
END Testname;

```

The specification of package REPORT is given in the file REPSPEC.ADA. The body of package REPORT is given in the file REPBODY.ADA. The specification and body of package REPORT are also given in Appendix C.

The acceptance tests CZ1101A.ADA and CZ1102A.ADA must be compiled and executed before a validation attempt to ensure correct operation of REPORT. A listing of the output for CZ1101A.ADA is given in Appendix E.

3.3.2.1.2 Allowable Modifications To Package Report.

Since the body of package REPORT is independent of the tests themselves, it can be modified to use only those implementation features that are actually working. Modifications made for a validation attempt must be presented to the AVP.

3.3.2.2 File I/O.

3.3.2.2.1 Procedure CheckFile.

Some of the executable file-I/O tests (CE... tests) use a checking procedure called CHECKFILE. CHECKFILE is used to determine the implementation's text file characteristics.

The source code for this procedure is found in the file CHECKFILE.ADA. The body of procedure CHECKFILE is also given in Appendix D.

The acceptance test CZ1103A.ADA must be compiled and executed before a validation attempt to ensure correct operation of CHECKFILE. CZ1103A checks that errors in text files are properly detected; therefore, CZ1103A will print some failure messages when it is executed. The presence of these messages does not mean the test has failed. A listing of the output for CZ1103A.ADA is given in Appendix E.

3.3.2.3 Address Clauses.

3.3.2.3.1 Package Spprt13.

Package SPPRT13 contains functions which return values of type SYSTEM.ADDRESS for use in ADDRESS clauses. Only the specification of this package is distributed with the ACVC; the body must be supplied by the implementer. Spprt13 is required for running test B91001H.ADA, many chapter 13 tests (CD... tests), and AVAT.

3.3.2.3.2 Allowable Modifications To Package Spprt13.

If the type SYSTEM.ADDRESS is defined to be static, then the functions in package SPPRT13 can be replaced with constants. Modifications made for a validation attempt must be presented to the AVF.

APPENDIX A

Macros and Their Descriptions

Following is the information contained in the MACRO.DFS file. Each macro definition includes:

1. The macro itself.
2. A description of what the replacement value represents.
3. A list of tests which depend on the macro.
4. An example replacement value.

```
-- $MAX IN LEN
-- AN INTEGER LITERAL GIVING THE MAXIMUM LENGTH PERMITTED BY THE
-- COMPILER FOR A LINE OF ADA SOURCE CODE (NOT INCLUDING AN END-OF-LINE
-- CHARACTER).
-- USED IN: A26007A
MAX_IN_LEN          60

-- $BIG ID1
-- AN IDENTIFIER IN WHICH THE NUMBER OF CHARACTERS IS $MAX IN LEN.
-- USED IN: C23003A C23003B C23003C B23003D B23003E C23003G
--          C23003H C23003I C23003J C35502D C35502F
BIG_ID1
      AAAAAAAAA_AAAAAAAAA_AAAAAAAAA_AAAAAAAAA_AAAAAAAAA_AAAAAAAAA1

-- $BIG ID2
-- AN IDENTIFIER IN WHICH THE NUMBER OF CHARACTERS IS $MAX_IN_LEN,
-- DIFFERING FROM $BIG ID1 ONLY IN THE LAST CHARACTER.
-- USED IN: C23003A C23003B C23003C B23003F C23003G C23003H
--          C23003I C23003J
BIG_ID2
      AAAAAAAAA_AAAAAAAAA_AAAAAAAAA_AAAAAAAAA_AAAAAAAAA_AAAAAAAAA2
```

[illegible]

Macros and Their Descriptions

[illegible]

Macros and Their Descriptions

```
-- $FIXED NAME
-- THE NAME OF A PREDEFINED FIXED POINT TYPE OTHER THAN DURATION.
-- (IMPLEMENTATIONS WHICH HAVE NO SUCH TYPES SHOULD USE AN UNDEFINED
-- IDENTIFIER SUCH AS NO_SUCH_TYPE.)
-- USED IN: AVATO30 B86001Z
FIXED_NAME          NO_SUCH_FIXED_TYPE

-- $INTEGER FIRST
-- AN INTEGER LITERAL, WITH SIGN, WHOSE VALUE IS INTEGER'FIRST.
-- USED IN: C35503F B54B01B
INTEGER_FIRST       -32_768

-- $INTEGER LAST
-- AN INTEGER LITERAL WHOSE VALUE IS INTEGER'LAST.
-- USED IN: C35503F B45232A B45B01B
INTEGER_LAST        32_767

-- $INTEGER LAST PLUS 1
-- AN INTEGER LITERAL WHOSE VALUE IS INTEGER'LAST + 1.
-- USED IN: C45232A
INTEGER_LAST_PLUS_1 32_768

-- $MIN INT
-- AN INTEGER LITERAL, WITH SIGN, WHOSE VALUE IS SYSTEM.MIN INT.
-- THE LITERAL MUST NOT CONTAIN UNDERSCORES OR LEADING OR TRAILING
-- BLANKS.
-- USED IN: C35503D C35503F CD7101B
MIN_INT             -2147483648

-- $MAX INT
-- AN INTEGER LITERAL WHOSE VALUE IS SYSTEM.MAX INT.
-- THE LITERAL MUST NOT INCLUDE UNDERSCORES OR LEADING OR TRAILING
-- BLANKS.
-- USED IN: C35503D C35503F C4A007A CD7101B
MAX_INT             2147483647

-- $MAX INT PLUS 1
-- AN INTEGER LITERAL WHOSE VALUE IS SYSTEM.MAX_INT + 1.
-- USED IN: C45232A
MAX_INT_PLUS_1      2_147_483_648

-- $LESS THAN DURATION
-- A REAL LITERAL (WITH SIGN) WHOSE VALUE (NOT SUBJECT TO
-- ROUND-OFF ERROR IF POSSIBLE) LIES BETWEEN DURATION'BASE'FIRST AND
-- DURATION'FIRST. IF NO SUCH VALUES EXIST, USE A VALUE IN
-- DURATION'RANGE.
-- USED IN: C96005B
LESS_THAN_DURATION  -75_000.0
```

Macros and Their Descriptions

```
-- $GREATER THAN DURATION
-- A REAL LITERAL WHOSE VALUE (NOT SUBJECT TO ROUND-OFF ERROR
-- IF POSSIBLE) LIES BETWEEN DURATION'BASE'LAST AND DURATION'LAST. IF
-- NO SUCH VALUES EXIST, USE A VALUE IN DURATION'RANGE.
-- USED IN: C96005B
GREATER_THAN_DURATION          75_000.0

-- $LESS THAN DURATION BASE FIRST
-- A REAL LITERAL (WITH SIGN) WHOSE VALUE IS LESS THAN
-- DURATION'BASE'FIRST.
-- USED IN: C96005C
LESS_THAN_DURATION_BASE_FIRST  -131_073.0

-- $GREATER THAN DURATION BASE LAST
-- A REAL LITERAL WHOSE VALUE IS GREATER THAN DURATION'BASE'LAST.
-- USED IN: C96005C
GREATER_THAN_DURATION_BASE_LAST 131_073.0

-- $COUNT LAST
-- AN INTEGER LITERAL WHOSE VALUE IS TEXT_IO.COUNT'LAST.
-- USED IN: CE3002B
COUNT_LAST                     32_767

-- $FIELD LAST
-- AN INTEGER LITERAL WHOSE VALUE IS TEXT_IO.FIELD'LAST.
-- USED IN: CE3002C
FIELD_LAST                      32_767

-- $ILLEGAL EXTERNAL FILE NAME1
-- AN ILLEGAL EXTERNAL FILE NAME (E.G., TOO LONG, CONTAINING INVALID
-- CHARACTERS, CONTAINING WILD-CARD CHARACTERS, OR SPECIFYING A
-- NONEXISTENT DIRECTORY).
-- USED IN: CE2103A CE2102C CE2102H CE2103B CE3102B CE3107A
ILLEGAL_EXTERNAL_FILE_NAME1 \NODIRECTORY\FILENAME

-- $ILLEGAL EXTERNAL FILE NAME2
-- AN ILLEGAL EXTERNAL FILE NAME, DIFFERENT FROM $EXTERNAL_FILE_NAME1.
-- USED IN: CE2102C CE2102H CE2103A CE2103B
ILLEGAL_EXTERNAL_FILE_NAME2 THIS-FILE-NAME-IS-TOO-LONG-FOR-MY-SYSTEM

-- $ACC SIZE
-- AN INTEGER LITERAL WHOSE VALUE IS THE MINIMUM NUMBER OF BITS
-- SUFFICIENT TO HOLD ANY VALUE OF AN ACCESS TYPE.
-- USED IN: CD1C03C CD2A81A CD2A81B CD2A81C CD2A81D CD2A81E
--          CD2A81F CD2A81G CD2A83A CD2A83B CD2A83C CD2A83E
--          CD2A83F CD2A83G ED2A86A CD2A87A
ACC_SIZE                        32
```

Macros and Their Descriptions

```
-- TASK_SIZE
-- AN INTEGER LITERAL WHOSE VALUE IS THE NUMBER OF BITS REQUIRED TO
-- HOLD A TASK OBJECT WHICH HAS A SINGLE ENTRY WITH ONE INOUT PARAMETER.
-- USED IN: CD2A91A CD2A91B CD2A91C CD2A91D CD2A91E
TASK_SIZE          128

-- $MIN TASK SIZE
-- AN INTEGER LITERAL WHOSE VALUE IS THE NUMBER OF BITS REQUIRED TO
-- HOLD A TASK OBJECT WHICH HAS NO ENTRIES, NO DECLARATIONS, AND "NULL;"
-- AS THE ONLY STATEMENT IN ITS BODY.
-- USED IN: CD2A95A
MIN_TASK_SIZE      64

-- $NAME LIST
-- A LIST OF THE ENUMERATION LITERALS IN THE TYPE SYSTEM.NAME, SEPARATED
-- BY COMMAS.
-- USED IN: CD7003A
NAME_LIST          OUR_VMS_ADA, OUR_ULTRIX_ADA, OUR_ELN_ADA

-- $DEFAULT SYS_NAME
-- THE VALUE OF THE CONSTANT SYSTEM.SYSTEM_NAME.
-- USED IN: CD7004A CD7004C CD7004D
DEFAULT_SYS_NAME   OUR_VMS_ADA

-- $NEW SYS NAME
-- A VALUE OF THE TYPE SYSTEM.NAME, OTHER THAN $DEFAULT SYS NAME. IF
-- THERE IS ONLY ONE VALUE OF THE TYPE, THEN USE THAT VALUE.
-- NOTE: IF THERE ARE MORE THAN TWO VALUES OF THE TYPE, THEN THE
-- PERTINENT TESTS ARE TO BE RUN ONCE FOR EACH ALTERNATIVE.
-- USED IN: ED7004B1
NEW_SYS_NAME       OUR_ULTRIX_ADA

-- $DEFAULT STOR UNIT
-- AN INTEGER LITERAL WHOSE VALUE IS SYSTEM.STORAGE_UNIT.
-- USED IN: CD7005B ED7005D3M CD7005E
DEFAULT_STOR_UNIT  16

-- $NEW STOR UNIT
-- AN INTEGER LITERAL WHOSE VALUE IS A PERMITTED ARGUMENT FOR
-- PRAGMA STORAGE UNIT, OTHER THAN $DEFAULT STOR UNIT. IF THERE
-- IS NO OTHER PERMITTED VALUE, THEN USE THE VALUE OF
-- $SYSTEM.STORAGE_UNIT. IF THERE IS MORE THAN ONE ALTERNATIVE,
-- THEN THE PERTINENT TESTS SHOULD BE RUN ONCE FOR EACH ALTERNATIVE.
-- USED IN: ED7005C1 ED7005D1 CD7005E
NEW_STOR_UNIT      8

-- $DEFAULT MEM SIZE
-- AN INTEGER LITERAL WHOSE VALUE IS SYSTEM.MEMORY_SIZE.
-- USED IN: CD7006B ED7006D3M CD7006E
DEFAULT_MEM_SIZE   655_360
```

Macros and Their Descriptions

```
-- $NEW MEM SIZE
-- AN INTEGER LITERAL WHOSE VALUE IS A PERMITTED ARGUMENT FOR
-- PRAGMA MEMORY SIZE, OTHER THAN $DEFAULT MEM SIZE. IF THERE IS NO
-- OTHER VALUE, THEN USE $DEFAULT MEM SIZE. IF THERE IS MORE THAN
-- ONE ALTERNATIVE, THEN THE PERTINENT TESTS SHOULD BE RUN ONCE FOR
-- EACH ALTERNATIVE. IF THE NUMBER OF PERMITTED VALUES IS LARGE, THEN
-- SEVERAL VALUES SHOULD BE USED, COVERING A WIDE RANGE OF
-- POSSIBILITIES.
-- USED IN: ED7006C1 ED7006D1 CD7006E
NEW_MEM_SIZE      1_048_576

-- $LOW PRIORITY
-- AN INTEGER LITERAL WHOSE VALUE IS THE LOWER BOUND OF THE RANGE
-- FOR THE SUBTYPE SYSTEM.PRIORITY.
-- USED IN: CD7007C
LOW_PRIORITY      0

-- $HIGH PRIORITY
-- AN INTEGER LITERAL WHOSE VALUE IS THE UPPER BOUND OF THE RANGE
-- FOR THE SUBTYPE SYSTEM.PRIORITY.
-- USED IN: CD7007C
HIGH_PRIORITY     3

-- $MANTISSA_DOC
-- AN INTEGER LITERAL WHOSE VALUE IS SYSTEM.MAX_MANTISSA AS SPECIFIED
-- IN THE IMPLEMENTOR'S DOCUMENTATION.
-- USED IN: CD7013B
MANTISSA_DOC      31

-- $DELTA_DOC
-- A REAL LITERAL WHOSE VALUE IS SYSTEM.FINE_DELTA AS SPECIFIED IN THE
-- IMPLEMENTOR'S DOCUMENTATION.
-- USED IN: CD7013D
DELTA_DOC         0.000_000_000_465_661_287_307_739_558_602_5

-- $TICK
-- A REAL LITERAL WHOSE VALUE IS SYSTEM.TICK AS SPECIFIED IN THE
-- IMPLEMENTOR'S DOCUMENTATION.
-- USED IN: CD7104B
TICK 0.001
```


APPENDIX B

Test Applicability Criteria

Certain tests in the suite may be considered inapplicable to an implementation depending on the way the implementation treats the implementation-dependent features of the language. A brief summary of these implementation-dependent features and the tests they affect are listed in this appendix.

Note that the applicability of each one of these tests is based on the criteria listed in the test file. All potentially inapplicable tests must still be compiled - except those tests which require a floating-point DIGITS value that exceeds SYSTEM.MAX_DIGITS - and executed if successfully compiled, to verify the implementation's treatment of these features. All results for a particular feature must be consistent.

The first part of this appendix is concerned with tests for which the applicability is determined at compile time. Class B tests that are inapplicable should be successfully compiled. Executable test that are inapplicable must be rejected at compile time as a result of the unsupported feature. Lines containing the implementation-dependent features are marked "-- NA -> ERROR.".

If the type SHORT_INTEGER is not predefined, then the following tests are inapplicable:

B52004E.DEP	B55B09D.DEP	B86001V.DEP
C45231B.DEP	C45304B.DEP	C45502B.DEP
C45503B.DEP	C45504B.DEP	C45504E.DEP
C45611B.DEP	C45613B.DEP	C45614B.DEP
C45631B.DEP	C45632B.DEP	C55B07B.DEP
CD7101E.DEP		

Compile Time Inapplicability

If the type LONG_INTEGER is not predefined, then the following tests are inapplicable:

B52004D.DEP	B55B09C.DEP	B86001W.DEP
C45231C.DEP	C45304C.DEP	C45502C.DEP
C45503C.DEP	C45504C.DEP	C45504F.DEP
C45611C.DEP	C45613C.DEP	C45614C.DEP
C45631C.DEP	C45632C.DEP	C55B07A.DEP
CD7101F.DEP		

If the type SHORT_FLOAT is not predefined, then the following tests are inapplicable:

B86001T.DEP C35702A.DEP

If the type LONG_FLOAT is not predefined, then the following tests are inapplicable:

B86001U.DEP C35702B.DEP

If there are no predefined integer types other than INTEGER, SHORT_INTEGER, and LONG_INTEGER, then the following tests are inapplicable:

B86001X.TST C45231D.TST CD7101G.TST

If there are no predefined floating-point types other than FLOAT, SHORT_FLOAT, and LONG_FLOAT, then the following test is inapplicable:

B86001Z.TST

If there are no predefined fixed-point types, then the following test is inapplicable:

B86001Y.TST

If 'SIZE representation clauses for boolean types are not supported, then the following tests are inapplicable:

CD2A64A.DEP	CD2A64C.DEP	CD2A65A.DEP
CD2A65C.DEP	CD2A74A.DEP	CD2A76A.DEP

Compile Time Inapplicability

If 'SIZE representation clauses for enumeration types are not supported, then the following tests are inapplicable:

A39005B.DEP	CD1009B.DEP	CD1009P.DEP
CD2A21A.DEP	CD2A21B.DEP	CD2A21C.DEP
CD2A21D.DEP	CD2A21E.DEP	CD2A22A.DEP
CD2A22B.DEP	CD2A22C.DEP	CD2A22D.DEP
CD2A22E.DEP	CD2A22F.DEP	CD2A22G.DEP
CD2A22H.DEP	CD2A22I.DEP	CD2A22J.DEP
CD2A23A.DEP	CD2A23B.DEP	CD2A23C.DEP
CD2A23D.DEP	CD2A23E.DEP	CD2A24A.DEP
CD2A24B.DEP	CD2A24C.DEP	CD2A24D.DEP
CD2A24E.DEP	CD2A24F.DEP	CD2A24G.DEP
CD2A24H.DEP	CD2A24I.DEP	CD2A24J.DEP
CD2A66B.DEP	CD2A66D.DEP	ED2A26A.DEP

If 'SIZE representation clauses for integer types are not supported, then the following tests are inapplicable:

C87B62A.DEP	CD1009A.DEP	CD1009O.DEP
CD1C03A.DEP	CD1C04A.DEP	CD2A31A.DEP
CD2A31B.DEP	CD2A31C.DEP	CD2A31D.DEP
CD2A32A.DEP	CD2A32B.DEP	CD2A32C.DEP
CD2A32D.DEP	CD2A32E.DEP	CD2A32F.DEP
CD2A32G.DEP	CD2A32H.DEP	CD2A32I.DEP
CD2A32J.DEP	CD2A64B.DEP	CD2A64D.DEP
CD2A65B.DEP	CD2A65D.DEP	CD2A74B.DEP
CD2A76B.DEP		

If 'SIZE representation clauses for floating-point types are not supported, then the following tests are inapplicable:

CD1009C.DEP	CD2A41A.DEP	CD2A41B.DEP
CD2A41C.DEP	CD2A41D.DEP	CD2A41E.DEP
CD2A42A.DEP	CD2A42B.DEP	CD2A42C.DEP
CD2A42D.DEP	CD2A42E.DEP	CD2A42F.DEP
CD2A42G.DEP	CD2A42H.DEP	CD2A42I.DEP
CD2A42J.DEP		

Compile Time Inapplicability

If 'SIZE representation clauses for fixed-point types are not supported, then the following tests are inapplicable:

CD1009D.DEP	CD1009Q.DEP	CD1C04C.DEP
CD2A51B.DEP	CD2A51C.DEP	CD2A51D.DEP
CD2A51E.DEP	CD2A52A.DEP	CD2A52B.DEP
CD2A52C.DEP	CD2A52D.DEP	CD2A52G.DEP
CD2A52H.DEP	CD2A52I.DEP	CD2A52J.DEP
CD2A53A.DEP	CD2A53B.DEP	CD2A53C.DEP
CD2A53D.DEP	CD2A53E.DEP	CD2A54A.DEP
CD2A54B.DEP	CD2A54C.DEP	CD2A54D.DEP
CD2A54G.DEP	CD2A54H.DEP	CD2A54I.DEP
CD2A54J.DEP	ED2A56A.DEP	

If 'SIZE representation clauses for array types are not supported, then the following tests are inapplicable:

CD1009E.DEP	CD1009F.DEP	CD2A61A.DEP
CD2A61B.DEP	CD2A61C.DEP	CD2A61D.DEP
CD2A61E.DEP	CD2A61F.DEP	CD2A61G.DEP
CD2A61H.DEP	CD2A61I.DEP	CD2A61J.DEP
CD2A61K.DEP	CD2A61L.DEP	CD2A62A.DEP
CD2A62B.DEP	CD2A62C.DEP	CD2A62D.DEP
CD2A63A.DEP	CD2A63B.DEP	CD2A63C.DEP
CD2A63D.DEP	CD2A64A.DEP	CD2A64B.DEP
CD2A64C.DEP	CD2A64D.DEP	CD2A65A.DEP
CD2A65B.DEP	CD2A65C.DEP	CD2A65D.DEP
CD2A66A.DEP	CD2A66B.DEP	CD2A66C.DEP
CD2A66D.DEP		

If 'SIZE representation clauses for record types are not supported, then the following tests are inapplicable:

CD1009G.DEP	CD2A71A.DEP	CD2A71B.DEP
CD2A71C.DEP	CD2A71D.DEP	CD2A72A.DEP
CD2A72B.DEP	CD2A72C.DEP	CD2A72D.DEP
CD2A73A.DEP	CD2A73B.DEP	CD2A73C.DEP
CD2A73D.DEP	CD2A74A.DEP	CD2A74B.DEP
CD2A74C.DEP	CD2A74D.DEP	CD2A75A.DEP
CD2A75B.DEP	CD2A75C.DEP	CD2A75D.DEP
CD2A76A.DEP	CD2A76B.DEP	CD2A76C.DEP
CD2A76D.DEP		

If 'SIZE representation clauses for private types are not supported, then the following test is inapplicable:

CD1009H.DEP

If 'SIZE representation clauses for limited private types are not supported, then the following test is inapplicable:

CD1009I.DEP

If 'SIZE representation clauses for access types are not supported, then the following tests are inapplicable:

CD2A81A.TST	CD2A81B.TST	CD2A81C.TST
CD2A81D.TST	CD2A81E.TST	CD2A81F.TST
CD2A81G.TST	CD2A83A.TST	CD2A83B.TST
CD2A83C.TST	CD2A83E.TST	CD2A83F.TST
CD2A83G.TST	CD2A84A.DEP	CD2A84B.DEP
CD2A84C.DEP	CD2A84D.DEP	CD2A84E.DEP
CD2A84F.DEP	CD2A84G.DEP	CD2A84H.DEP
CD2A84I.DEP	CD2A84K.DEP	CD2A84L.DEP
CD2A84M.DEP	CD2A84N.DEP	CD2A87A.TST
ED2A86A.TST		

If 'SIZE representation clauses for task types are not supported, then the following tests are inapplicable:

CD2A91A.TST	CD2A91B.TST	CD2A91C.TST
CD2A91D.TST	CD2A91E.TST	

If 'STORAGE SIZE representation clauses for access types are not supported, then the following tests are inapplicable:

A39005C.DEP	C87B62B.DEP	CD1009J.DEP
CD1009R.DEP	CD1009S.DEP	CD1C03C.TST
CD2A83A.TST	CD2A83B.TST	CD2A83C.TST
CD2A83E.TST	CD2A83F.TST	CD2A83G.TST
CD2A84A.DEP	CD2A84B.DEP	CD2A84C.DEP
CD2A84D.DEP	CD2A84E.DEP	CD2A84F.DEP
CD2A84G.DEP	CD2A84H.DEP	CD2A84I.DEP
CD2A84K.DEP	CD2A84L.DEP	CD2A84M.DEP
CD2A84N.DEP	CD2B11A.DEP	CD2B11B.DEP
CD2B11C.DEP	CD2B11D.DEP	CD2B11E.DEP
CD2B11F.DEP	CD2B11G.DEP	CD2B15B.DEP
CD2B15C.DEP	CD2B16A.DEP	CD7205C.DEP
ED2A86A.TST		

If 'STORAGE SIZE representation clauses for task types are not supported, then the following tests are inapplicable:

A39005D.DEP	C87B62D.DEP	CD1009K.DEP
CD1009T.DEP	CD1009U.DEP	CD1C03E.DEP
CD1C04B.DEP	CD1C06A.DEP	CD7205D.DEP

Compile Time Inapplicability

If the 'SMALL' clause is not supported, then the following tests are inapplicable:

A39005E.DEP	C87B62C.DEP	CD1009L.DEP
CD1C03F.DEP	CD2A53A.DEP	CD2A53B.DEP
CD2A53C.DEP	CD2A53D.DEP	CD2A53E.DEP
CD2A54A.DEP	CD2A54B.DEP	CD2A54C.DEP
CD2A54D.DEP	CD2A54G.DEP	CD2A54H.DEP
CD2A54I.DEP	CD2A54J.DEP	CD2D11A.DEP
CD2D11B.DEP	CD2D13A.DEP	ED2A56A.DEP

If enumeration representation clauses are not supported, then the following tests are inapplicable:

AD1009M.DEP	AD1009V.DEP	AD1009W.DEP
AD1C04D.DEP	C35502N.DEP	C35507I.DEP
C35507J.DEP	C35507M.DEP	C35507N.DEP
C35508J.DEP	CD1C03G.DEP	CD2A23A.DEP
CD2A23B.DEP	CD2A23C.DEP	CD2A23D.DEP
CD2A23E.DEP	CD2A24A.DEP	CD2A24B.DEP
CD2A24C.DEP	CD2A24D.DEP	CD2A24E.DEP
CD2A24F.DEP	CD2A24G.DEP	CD2A24H.DEP
CD2A24I.DEP	CD2A24J.DEP	CD3021A.DEP
ED2A26A.DEP		

If enumeration representation clauses for non-contiguous values are not supported, then the following tests are inapplicable:

A39005F.DEP	C35502I.DEP	C35502J.DEP
C35502M.DEP	C35502N.DEP	C35507J.DEP
C35507M.DEP	C35507N.DEP	C35508I.DEP
C35508J.DEP	C35508M.DEP	C35508N.DEP
C55B16A.DEP		

If enumeration representation clauses for types other than character and boolean are not supported, then the following tests are inapplicable:

A39005F.DEP	C35502I.DEP	C35502J.DEP
C35502M.DEP	C35502N.DEP	

If enumeration representation clauses for character types are not supported, then the following tests are inapplicable:

C35507I.DEP	C35507J.DEP	C35507M.DEP
C35507N.DEP	C55B16A.DEP	

Compile Time Inapplicability

If enumeration representation clauses for boolean types, with representation values other than (FALSE => 0, TRUE =>1), are not supported, then the following tests are inapplicable:

C35508I.DEP	C35508J.DEP	C35508M.DEP
C35508N.DEP		

If record representation clauses are not supported, then the following tests are inapplicable:

A39005G.DEP	CD1009N.DEP	CD1009X.DEP
CD1009Y.DEP	CD1009Z.DEP	CD1C03H.DEP
CD1C04E.DEP	CD4031A.DEP	CD4051A.DEP
CD4051B.DEP	CD4051C.DEP	CD7204C.DEP
ED1D04A.DEP		

If 'ADDRESS clauses for variables are not supported, or if the type SYSTEM.ADDRESS is limited, then the following tests are inapplicable:

CD5003B.DEP	CD5003C.DEP	CD5003D.DEP
CD5003E.DEP	CD5003F.DEP	CD5003G.DEP
CD5003H.DEP	CD5003I.DEP	CD5011A.DEP
CD5011C.DEP	CD5011E.DEP	CD5011G.DEP
CD5011I.DEP	CD5011K.DEP	CD5011M.DEP
CD5011O.DEP	CD5011Q.DEP	CD5012A.DEP
CD5012B.DEP	CD5012E.DEP	CD5012F.DEP
CD5012I.DEP	CD5012J.DEP	CD5012M.DEP
CD5013A.DEP	CD5013C.DEP	CD5013E.DEP
CD5013G.DEP	CD5013I.DEP	CD5013K.DEP
CD5013M.DEP	CD5013O.DEP	CD5013S.DEP
CD5014A.DEP	CD5014C.DEP	CD5014E.DEP
CD5014G.DEP	CD5014I.DEP	CD5014K.DEP
CD5014M.DEP	CD5014O.DEP	CD5014S.DEP
CD5014T.DEP	CD5014V.DEP	CD5014X.DEP
CD5014Y.DEP	CD5014Z.DEP	

Compile Time Inapplicability

If 'ADDRESS clauses for constants are not supported, or if the type SYSTEM.ADDRESS is limited, then the following tests are inapplicable:

CD5011B.DEP	CD5011D.DEP	CD5011F.DEP
CD5011H.DEP	CD5011L.DEP	CD5011N.DEP
CD5011R.DEP	CD5011S.DEP	CD5012C.DEP
CD5012D.DEP	CD5012G.DEP	CD5012H.DEP
CD5012L.DEP	CD5013B.DEP	CD5013D.DEP
CD5013F.DEP	CD5013H.DEP	CD5013J.DEP
CD5013L.DEP	CD5013N.DEP	CD5013R.DEP
CD5014B.DEP	CD5014D.DEP	CD5014F.DEP
CD5014H.DEP	CD5014J.DEP	CD5014L.DEP
CD5014N.DEP	CD5014R.DEP	CD5014U.DEP
CD5014W.DEP		

If 'ADDRESS clauses for subprograms are not supported, or if the type SYSTEM.ADDRESS is limited, then the following tests are inapplicable:

CD5007B.DEP

If the pragmas SYSTEMNAME, STORAGEUNIT, and MEMORYSIZE must come at the beginning of a program library, then the following files are omitted from the associated test:

ED7004B0.TST	ED7004B2.TST
ED7005C0.TST	ED7005C2.TST
ED7005D0.TST	ED7005D2.TST
ED7006C0.TST	ED7006C2.TST
ED7006D0.1ST	ED7006D2.TST

If any limitations, other than those specified in the RM, are imposed on the use of the pragmas SYSTEMNAME, STORAGEUNIT, and MEMORYSIZE, then the following test may be inapplicable:

CD7004C.TST CD7005E.TST CD7006E.TST

Consider the following declarations:

```
TYPE F IS DIGITS SYSTEM.MAXDIGITS;  
N : CONSTANT := 2.0 * F'MACHINERADIX ** F'MACHINEEMAX;
```

If the declaration of N is rejected on the grounds that evaluation of the expression will raise an exception, then the following test is inapplicable:

C4A013B.ADA

If the fixed-point type definitions

DELTA 0.5 RANGE -2.0**10 .. 2.0**10 - 0.5
 DELTA 1.0 RANGE -2.0**11 .. 2.0**11 - 1.0
 DELTA 2.0**10 RANGE -2.0**21 .. 2.0**21 - 2.0**10

are not supported, then the following tests are inapplicable:

C45531C.DEP C45531D.DEP C45532C.DEP
 C45532D.DEP

If the fixed-point type definitions

DELTA 0.5 RANGE -2.0**14 .. 2.0**14 - 0.5
 DELTA 1.0 RANGE -2.0**15 .. 2.0**15 - 1.0
 DELTA 2.0**14 RANGE -2.0**29 .. 2.0**29 - 2.0**14

are not supported, then the following tests are inapplicable:

C45531G.DEP C45531H.DEP C45532G.DEP
 C45532H.DEP

If the fixed-point type definitions

DELTA 0.5 RANGE -2.0**30 .. 2.0**30 - 0.5
 DELTA 1.0 RANGE -2.0**31 .. 2.0**31 - 1.0
 DELTA 2.0**30 RANGE -2.0**61 .. 2.0**61 - 2.0**30

are not supported, then the following tests are inapplicable:

C45531K.DEP C45531L.DEP C45532K.DEP
 C45532L.DEP

If the fixed-point type definitions

DELTA 0.5 RANGE -2.0**46 .. 2.0**46 - 0.5
 DELTA 1.0 RANGE -2.0**47 .. 2.0**47 - 1.0
 DELTA 2.0**46 RANGE -2.0**93 .. 2.0**93 - 2.0**46

are not supported, then the following tests are inapplicable:

C455310.DEP C45531P.DEP C455320.DEP
 C45532P.DEP

Compile Time Inapplicability

If the fixed-point type definitions

DELTA 2.0**-12 RANGE -0.5 .. 0.5 - 2.0**-12
DELTA 2.0**-11 RANGE -1.0 .. 1.0 - 2.0**-11
DELTA 2.0**-10 RANGE -2.0 .. 2.0 - 2.0**-10

are not supported, then the following tests are inapplicable:

C45531A.DEP C45531B.DEP C45532A.DEP
C45532B.DEP

If the fixed-point type definitions

DELTA 2.0**-16 RANGE -0.5 .. 0.5 - 2.0**-16
DELTA 2.0**-15 RANGE -1.0 .. 1.0 - 2.0**-15
DELTA 2.0**-14 RANGE -2.0 .. 2.0 - 2.0**-14

are not supported, then the following tests are inapplicable:

C45531E.DEP C45531F.DEP C45532E.DEP
C45532F.DEP

If the fixed-point type definitions

DELTA 2.0**-32 RANGE -0.5 .. 0.5 - 2.0**-32
DELTA 2.0**-31 RANGE -1.0 .. 1.0 - 2.0**-31
DELTA 2.0**-30 RANGE -2.0 .. 2.0 - 2.0**-30

are not supported, then the following tests are inapplicable:

C45531I.DEP C45531J.DEP C45532I.DEP
C45532J.DEP

If the fixed-point type definitions

DELTA 2.0**-48 RANGE -0.5 .. 0.5 - 2.0**-48
DELTA 2.0**-47 RANGE -1.0 .. 1.0 - 2.0**-47
DELTA 2.0**-46 RANGE -2.0 .. 2.0 - 2.0**-46

are not supported, then the following tests are inapplicable:

C45531M.DEP C45531N.DEP C45532M.DEP
C45532N.DEP

Compile Time Inapplicability

The following tests depend on the value of SYSTEM.MAX_DIGITS:

C24113*.DEP	C35705*.DEP	C35706*.DEP
C35707*.DEP	C35708*.DEP	C35802*.DEP
C45241*.DEP	C45321*.DEP	C45421*.DEP
C45521*.DEP	C45524*.DEP	C45621*.DEP
C45641*.DEP	C46012*.DEP	

Use the table below to determine which of these tests are applicable based on the value of SYSTEM.MAX_DIGITS.

Value of MAX_DIGITS	Last Letter of Test Name of Applicable Tests
5	A
6	A,B
7	A..C
8	A..D
9	A..E
10	A..F
11	A..G
12	A..H
13	A..I
14	A..J
15	A..K
16	A..L
17	A..M
18	A..N
19	A..O
20	A..P
21	A..Q
22	A..R
23	A..S
24	A..T
25	A..U
26	A..V
27	A..W
28	A..X
29	A..Y
30	A..Z

If the value of SYSTEM.MAX_DIGITS > 35, then the following test is inapplicable:

C4A011A.ADA

Compile Time Inapplicability

If a generic library-subprogram body cannot be compiled in a separate file than its specification, then the following test is inapplicable:

CA1012A*.DEP

If a generic library-package body cannot be compiled in a separate file than its specification, then the following tests are inapplicable:

BC3204C*.DEP BC3204D*.DEP

If a generic, non-library package body cannot be compiled as a subunit in a separate file than its specification, then the following test is inapplicable:

CA2009C*.DEP

If a generic, non-library subprogram body cannot be compiled as a subunit in a separate file than its specification, then the following test is inapplicable:

CA2009F*.DEP

If a generic procedure cannot have subunits which are compiled in separate files than the generic unit, then the following test is inapplicable:

CA3011A*.DEP

If package SYSTEM is used by package TEXT_IO, then the following test is inapplicable:

C86001F.DEP

If SEQUENTIAL_IO cannot be instantiated with an unconstrained array type, then the following tests are inapplicable:

AE2101C.DEP EE2201D.ADA

If SEQUENTIAL_IO cannot be instantiated with a record type with discriminants with no default values, then the following tests are inapplicable:

AE2101C.DEP EE2201E.ADA

Compile Time Inapplicability

If DIRECT IO cannot be instantiated with an unconstrained array type, then the following tests are inapplicable:

AE2101H.DEP EE2401D.ADA

If DIRECT_IO cannot be instantiated with a record type with discriminants with no default values, then the following tests are inapplicable:

AE2101H.DEP EE2401G.ADA

If there are no strings which are illegal as external file names, then the following tests are inapplicable:

CE2102C.TST CE2102H.TST

Tests Which Report "NOT-APPLICABLE"

This section is concerned with tests that can detect, at runtime, certain implementation characteristics that make the tests inapplicable. The result reported for these tests is 'NOT_APPLICABLE'. These tests must compile and execute.

If USE_ERROR or NAME_ERROR is raised by every attempt to create or open a text file with mode IN_FILE (this is the appropriate behavior for an implementation which does not support text files other than standard input and output; See AI-00332), then the following test should report NOT_APPLICABLE:

CE3109A.ADA

If CREATE with mode IN_FILE is supported for text files, then the following test should report NOT_APPLICABLE:

CE3102E.ADA

If OPEN with mode IN_FILE is supported for text files, then the following test should report NOT_APPLICABLE:

CE3102J.ADA

If USE_ERROR or NAME_ERROR is raised by every attempt to create or open a text file with mode OUT_FILE (this is the appropriate behavior for an implementation which does not support text files other than standard input and output; see AI-00332), then the following tests should report NOT_APPLICABLE:

CE2109C.ADA	CE3102A.ADA	CE3102B.TST
CE3107B.ADA	CE3112C.ADA	CE3402D.ADA
CE3403A.ADA	CE3406B.ADA	CE3407B.ADA
CE3408B.ADA	CE3409A.ADA	CE3410A.ADA
CE3605A.ADA	CE3605E.ADA	CE3706F.ADA
CE3905B.ADA	EE3405B.ADA	EE3409F.ADA
EE3410F.ADA		

If CREATE with mode OUT_FILE is supported for text files, then the following test should report NOT_APPLICABLE:

CE3102I.ADA

Tests Which Report "NOT-APPLICABLE"

If OPEN with mode OUT_FILE is supported for text files, then the following test should report NOT_APPLICABLE:

CE3102K.ADA

If RESET is supported for text files, then the following test should report NOT_APPLICABLE:

CE3102F.ADA

If DELETE for text files is supported, then the following test should report NOT_APPLICABLE:

CE3102G.ADA

If USE_ERROR or NAME_ERROR is raised by every attempt to create or open a text file (this is the appropriate behavior for an implementation which does not support text files other than standard input and output; see AI-00332), then the following tests should report NOT_APPLICABLE:

CE2108A.ADA	CE2108B.ADA	CE2108C.ADA
CE2108D.ADA	CE3102H.ADA	CE3103A.ADA
CE3104A.ADA	CE3104B.ADA	CE3108A.ADA
CE3108B.ADA	CE3110A.ADA	CE3112A.ADA
CE3112B.ADA	CE3112D.ADA	CE3114A.ADA
CE3203A.ADA	CE3208A.ADA	CE3301A.ADA
CE3301B.ADA	CE3301C.ADA	CE3302A.ADA
CE3305A.ADA	CE3402A.ADA	CE3402B.ADA
CE3402C.ADA	CE3403B.ADA	CE3403C.ADA
CE3403E.ADA	CE3403F.ADA	CE3404A.ADA
CE3404B.ADA	CE3404C.ADA	CE3404D.ADA
CE3405A.ADA	CE3405B.ADA	CE3405C.ADA
CE3405D.ADA	CE3406A.ADA	CE3406C.ADA
CE3406D.ADA	CE3407A.ADA	CE3407C.ADA
CE3408A.ADA	CE3408C.ADA	CE3409C.ADA
CE3409D.ADA	CE3409E.ADA	CE3409F.ADA
CE3410C.ADA	CE3410D.ADA	CE3410E.ADA
CE3410F.ADA	CE3411A.ADA	CE3411B.ADA
CE3411C.ADA	CE3412A.ADA	CE3413A.ADA
CE3413C.ADA	CE3602A.ADA	CE3602B.ADA
CE3602C.ADA	CE3602D.ADA	CE3603A.ADA
CE3604A.ADA	CE3604B.ADA	CE3605B.ADA
CE3605C.ADA	CE3605D.ADA	CE3606A.ADA
CE3606B.ADA	CE3704A.ADA	CE3704B.ADA
CE3704D.ADA	CE3704E.ADA	CE3704F.ADA
CE3704M.ADA	CE3704N.ADA	CE3704O.ADA
CE3706D.ADA	CE3706G.ADA	CE3804A.ADA
CE3804B.ADA	CE3804C.ADA	CE3804D.ADA

Tests Which Report "NOT-APPLICABLE"

CE3804E.ADA	CE3804F.ADA	CE3804G.ADA
CE3804H.ADA	CE3804I.ADA	CE3804J.ADA
CE3804K.ADA	CE3804L.ADA	CE3804M.ADA
CE3804N.ADA	CE3804O.ADA	CE3804P.ADA
CE3805A.ADA	CE3805B.ADA	CE3806A.ADA
CE3806B.ADA	CE3806D.ADA	CE3806E.ADA
CE3806G.ADA	CE3806H.ADA	CE3905A.ADA
CE3905C.ADA	CE3905L.ADA	CE3906A.ADA
CE3906B.ADA	CE3906C.ADA	CE3906E.ADA
CE3906F.ADA	EE3203A.ADA	EE3402B.ADA
EE3412C.ADA		

If RESET is not supported for text files, then the following tests should report NOT_APPLICABLE:

CE3104C.ADA CE3115A.ADA

If DELETE for text files is not supported, then the following tests should report NOT_APPLICABLE:

CE3110A.ADA CE3114A.ADA

If association of multiple internal text files to a single external file is not supported, then the following tests should report NOT_APPLICABLE:

CE2110B.ADA	CE3111A.ADA	CE3111B.ADA
CE3111C.ADA	CE3111D.ADA	CE3111E.ADA
CE3114B.ADA	CE3115A.ADA	

If USE_ERROR or NAME_ERROR is raised by every attempt to create or open a sequential file with mode IN_FILE (this is the appropriate behavior for an implementation which does not support sequential files; see AI-00332)' then the following test should report NOT_APPLICABLE:

CE2105A.ADA

If CREATE and OPEN with mode IN_FILE are supported for sequential files, then the following tests should report NOT_APPLICABLE:

CE2102D.ADA CE2102N.ADA

Tests Which Report "NOT-APPLICABLE"

If RESET to mode IN FILE is supported for sequential files , then the following tests should report NOT_APPLICABLE:

CE21020.ADA	CE2111F.ADA	CE2111I.ADA
CE2204C.ADA		

If USE_ERROR or NAME_ERROR is raised by every attempt to create or open a sequential file with mode OUT FILE (this is the appropriate behavior for an implementation which does not support sequential files; see AI-00332), then the following tests should report NOT_APPLICABLE:

CE2102A.ADA	CE2102C.TST	CE2102X.ADA
CE2106A.ADA	CE2108E.ADA	CE2109A.ADA
CE2110A.ADA		

If CREATE and OPEN with mode OUT FILE are supported, then the following tests should report NOT_APPLICABLE:

CE2102E.ADA	CE2102P.ADA
-------------	-------------

If RESET to mode OUT FILE is supported for sequential files, then the following test should report NOT_APPLICABLE:

CE2102Q.ADA

If RESET to mode OUT FILE is not supported for sequential files, then the following tests should report NOT_APPLICABLE:

CE2111C.ADA	CE2111D.ADA	CE2111F.ADA
CE2111I.ADA		

If DELETE for sequential files is not supported, then the following tests should report NOT_APPLICABLE:

CE2106A.ADA	CE2110A.ADA
-------------	-------------

If association of multiple internal sequential files to a single external file is not supported, then the following tests should report NOT_APPLICABLE:

CE2107A.ADA	CE2107B.ADA	CE2107C.ADA
CE2107D.ADA	CE2111D.ADA	

Tests Which Report "NOT-APPLICABLE"

If `USE_ERROR` or `NAME_ERROR` is raised by every attempt to create or open a sequential file (this is the appropriate behavior for an implementation which does not support sequential files; see AI-00332), then the following tests should report `NOT_APPLICABLE`:

CE2103C.ADA	CE2102G.ADA	CE2104A.ADA
CE2104B.ADA	CE2108A.ADA	CE2108B.ADA
CE2108F.ADA	CE2111A.ADA	CE2115B.ADA
CE2201A.ADA	CE2201B.ADA	CE2201C.ADA
CE2201F.ADA	CE2201G.ADA	CE2201H.ADA
CE2201I.ADA	CE2201J.ADA	CE2201K.ADA
CE2201L.ADA	CE2201M.ADA	CE2201N.ADA
CE2204A.ADA	CE2204B.ADA	CE2204C.ADA
CE2204D.ADA	CE2205A.ADA	CE2208B.ADA
CE2210A.ADA		

If `USE_ERROR` or `NAME_ERROR` is raised by every attempt to create or open a direct access file with mode `IN_FILE` (this is the appropriate behavior for an implementation which does not support direct access files; see AI-00332), then the following tests should report `NOT_APPLICABLE`:

CE2105B.ADA	CE2401E.ADA	CE2401F.ADA
CE2401H.ADA	CE2401I.ADA	CE2401J.ADA
CE2405B.ADA	CE2407A.ADA	

If `CREATE` with mode `IN_FILE` is supported for direct access files, then the following test should report `NOT_APPLICABLE`:

CE2102I.ADA

If `OPEN` with mode `IN_FILE` is supported for direct access files, then the following test should report `NOT_APPLICABLE`:

CE2102T.ADA

If `RESET` with mode `IN_FILE` is supported for direct access files, then the following tests should report `NOT_APPLICABLE`:

CE2102U.ADA	CE2407B.ADA
-------------	-------------

If `RESET` with mode `IN_FILE` is not supported for direct access files, then the following tests should report `NOT_APPLICABLE`:

CE2111B.ADA	CE2111G.ADA	CE2111H.ADA
-------------	-------------	-------------

Tests Which Report "NOT-APPLICABLE"

If USE_ERROR or NAME_ERROR is raised by every attempt to create or open a direct access file with mode OUT_FILE (this is the appropriate behavior for an implementation which does not support direct access files; see AI-00332), then the following tests should report NOT_APPLICABLE:

CE2102B.ADA	CE2102Y.ADA	CE2106B.ADA
CE2110C.ADA	CE2401K.ADA	CE2404A.ADA
CE2404B.ADA	CE2407A.ADA	CE2407B.ADA
CE2408A.ADA	CE2409B.ADA	CE2410A.ADA
CE2410B.ADA		

If CREATE and OPEN with mode OUT_FILE is supported for direct access files, then the following tests should report NOT_APPLICABLE:

CE2102J.ADA CE2102V.ADA

If RESET with mode OUT_FILE is supported for direct access files, then the following test should report NOT_APPLICABLE:

CE2102W.ADA

If USE_ERROR or NAME_ERROR is raised by every attempt to create or open a direct access file with mode INOUT_FILE (this is the appropriate behavior for an implementation which does not support direct access files; see AI-00332), then the following tests should report NOT_APPLICABLE:

CE2102H.TST	CE2109B.ADA	CE2401E.ADA
CE2401F.ADA	CE2401H.ADA	CE2401I.ADA
CE2401J.ADA	CE2401K.ADA	CE2401L.ADA
CE2405B.ADA	CE2408B.ADA	CE2409A.ADA

If CREATE and OPEN with mode INOUT_FILE are supported for direct access files, then the following tests should report NOT_APPLICABLE:

CE2102F.ADA CE2102R.ADA

If RESET to mode INOUT_FILE is supported for direct access files, then the following test should report NOT_APPLICABLE:

CE2102S.ADA

Tests Which Report "NOT-APPLICABLE"

If DELETE for direct access files is not supported, then the following tests should report NOT_APPLICABLE:

CE2106B.ADA CE2110C.ADA

If association of multiple internal direct access files to a single external file is not supported, then the following tests should report NOT_APPLICABLE:

CE2107F.ADA CE2107G.ADA CE2107H.ADA
CE2107I.ADA CE2110D.ADA CE2111H.ADA

If USE_ERROR or NAME_ERROR is raised by every attempt to create or open a direct access file (this is the appropriate behavior for an implementation which does not support direct access files; see AI-00332), then the following tests should report NOT_APPLICABLE:

CE2102K.ADA CE2103D.ADA CE2104C.ADA
CE2104D.ADA CE2108C.ADA CE2108D.ADA
CE2108G.ADA CE2108H.ADA CE2111E.ADA
CE2115A.ADA CE2401A.ADA CE2401B.ADA
CE2401C.ADA CE2406A.ADA CE2411A.ADA

If association of an internal sequential file and an internal direct access file to a single external file is not supported, then the following tests should report NOT_APPLICABLE:

CE2107E.ADA CE2107L.ADA

If the INLINE pragma is not supported for PROCEDURES, then the following tests should report NOT_APPLICABLE:

CA3004E*.ADA EA3004C*.ADA LA3004A*.ADA

If the INLINE pragma is not supported for FUNCTIONS, then the following tests should report NOT_APPLICABLE:

CA3004F*.ADA EA3004D*.ADA LA3004B*.ADA

If excessive recursion causes STORAGE_ERROR to be raised, then the following test should report NOT_APPLICABLE:

D64005F*.ADA

Tests Which Report "NOT-APPLICABLE"

If DURATION'FIRST = DURATION'BASE'FIRST or DURATION'LAST = DURATION'BASE'LAST, then the following test should report NOT_APPLICABLE, if it otherwise executes properly:

C96005B.TST

Consider the declaration

TYPE F IS DIGITS SYSTEM.MAX_DIGITS;

If F'MACHINE OVERFLOWS is false and 2.0 * F'MACHINE_RADIX ** F'MACHINE_EMAX <= F'BASE' LARGE, then the following test should report NOT_APPLICABLE if it compiles without error:

C4A013B.ADA

APPENDIX C

Package REPORT Specification and Body

-- REPSPEC.ADA

-- PURPOSE:

-- THIS REPORT PACKAGE PROVIDES THE MECHANISM FOR REPORTING THE
-- PASS/FAIL/NOT-APPLICABLE RESULTS OF EXECUTABLE (CLASSES A, C,
-- D, E, AND L) TESTS.

-- IT ALSO PROVIDES THE MECHANISM FOR GUARANTEEING THAT CERTAIN
-- VALUES BECOME DYNAMIC (NOT KNOWN AT COMPILE-TIME).

-- HISTORY:

-- JRK 12/13/79
-- JRK 06/10/80
-- JRK 08/06/81
-- JRK 10/27/82
-- JRK 06/01/84
-- PWB 07/30/87 ADDED PROCEDURE SPECIAL ACTION.
-- TBN 08/20/87 ADDED FUNCTION LEGAL_FILE_NAME.

PACKAGE REPORT IS

SUBTYPE FILE_NUM IS INTEGER RANGE 1..3;

-- THE REPORT ROUTINES.

PROCEDURE TEST

(NAME : STRING;
DESCR : STRING

-- THIS ROUTINE MUST BE INVOKED AT THE
-- START OF A TEST, BEFORE ANY OF THE
-- OTHER REPORT ROUTINES ARE INVOKED.
-- IT SAVES THE TEST NAME AND OUTPUTS THE
-- NAME AND DESCRIPTION.
-- TEST NAME, E.G., "C23001A-AB".
-- BRIEF DESCRIPTION OF TEST, E.G.,
-- "UPPER/LOWER CASE EQUIVALENCE IN " &

REPORT Package Specification

```

-- "IDENTIFIERS".

);

PROCEDURE FAILED -- OUTPUT A FAILURE MESSAGE. SHOULD BE
-- INVOKED SEPARATELY TO REPORT THE
-- FAILURE OF EACH SUBTEST WITHIN A TEST.
( DESCR : STRING -- BRIEF DESCRIPTION OF WHAT FAILED.
-- SHOULD BE PHRASED AS:
-- "(FAILED BECAUSE) ...REASON...".
);

PROCEDURE NOT_APPLICABLE -- OUTPUT A NOT-APPLICABLE MESSAGE.
-- SHOULD BE INVOKED SEPARATELY TO REPORT
-- THE NON-APPLICABILITY OF EACH SUBTEST
-- WITHIN A TEST.
( DESCR : STRING -- BRIEF DESCRIPTION OF WHAT IS
-- NOT-APPLICABLE. SHOULD BE PHRASED AS:
-- "(NOT-APPLICABLE BECAUSE)...REASON...".
);

PROCEDURE SPECIAL_ACTION -- OUTPUT A MESSAGE DESCRIBING SPECIAL
-- ACTIONS TO BE TAKEN.
-- SHOULD BE INVOKED SEPARATELY TO GIVE
-- EACH SPECIAL ACTION.
( DESCR : STRING -- BRIEF DESCRIPTION OF ACTION TO BE
-- TAKEN.
);

PROCEDURE COMMENT -- OUTPUT A COMMENT MESSAGE.
( DESCR : STRING -- THE MESSAGE.
);

PROCEDURE RESULT; -- THIS ROUTINE MUST BE INVOKED AT THE
-- END OF A TEST. IT OUTPUTS A MESSAGE
-- INDICATING WHETHER THE TEST AS A
-- WHOLE HAS PASSED, FAILED, IS
-- NOT-APPLICABLE, OR HAS TENTATIVELY
-- PASSED PENDING SPECIAL ACTIONS.

-- THE DYNAMIC VALUE ROUTINES.

-- EVEN WITH STATIC ARGUMENTS, THESE FUNCTIONS WILL HAVE DYNAMIC
-- RESULTS.

FUNCTION IDENT_INT -- AN IDENTITY FUNCTION FOR TYPE INTEGER.
( X : INTEGER -- THE ARGUMENT.
) RETURN INTEGER; -- X.

FUNCTION IDENT_CHAR -- AN IDENTITY FUNCTION FOR TYPE
-- CHARACTER.
( X : CHARACTER -- THE ARGUMENT.
) RETURN CHARACTER; -- X.
```

REPORT Package Specification

```
FUNCTION IDENT_BOOL      -- AN IDENTITY FUNCTION FOR TYPE BOOLEAN.
  ( X : BOOLEAN          -- THE ARGUMENT.
  ) RETURN BOOLEAN;      -- X.

FUNCTION IDENT_STR       -- AN IDENTITY FUNCTION FOR TYPE STRING.
  ( X : STRING           -- THE ARGUMENT.
  ) RETURN STRING;       -- X.

FUNCTION EQUAL           -- A RECURSIVE EQUALITY FUNCTION FOR TYPE
  ( X, Y : INTEGER       -- INTEGER.
  ) RETURN BOOLEAN;      -- THE ARGUMENTS.
                          -- X = Y.

-- OTHER UTILITY ROUTINES.

FUNCTION LEGAL_FILE_NAME -- A FUNCTION TO GENERATE LEGAL EXTERNAL
  ( X : FILE_NUM := 1;    -- FILE NAMES.
    NAM : STRING := "";  -- DETERMINES FIRST CHARACTER OF NAME.
  ) RETURN STRING;        -- DETERMINES REST OF NAME.
                          -- THE GENERATED NAME.

END REPORT;
```


REPORT Package Body

-- REPBODY.ADA

-- HISTORY:

```
--      DCB 04/27/80
--      JRK 6/10/80
--      JRK 11/12/80
--      JRK 8/6/81
--      JRK 10/27/82
--      JRK 6/1/84
--      JRK 11/18/85  ADDED PRAGMA ELABORATE.
--      PWB 07/29/87  ADDED STATUS ACTION REQUIRED AND
--                      PROCEDURE SPECIAL ACTION.
--      TBN 08/20/87  ADDED FUNCTION LEGAL_FILE_NAME.
```

```
WITH TEXT_IO;
USE TEXT_IO;
PRAGMA ELABORATE (TEXT_IO);
```

PACKAGE BODY REPORT IS

```
TYPE STATUS IS (PASS, FAIL, DOES_NOT_APPLY, ACTION_REQUIRED);
TEST_STATUS : STATUS := FAIL;
```

```
MAX_NAME_LEN : CONSTANT := 15;      -- MAXIMUM TEST NAME LENGTH.
TEST_NAME : STRING (1..MAX_NAME_LEN);
```

```
NO_NAME : CONSTANT STRING (1..7) := "NO NAME";
TEST_NAME_LEN : INTEGER RANGE 0..MAX_NAME_LEN := 0;
```

```
PROCEDURE PUT_MSG (MSG : STRING) IS
-- WRITE MESSAGE. LONG MESSAGES ARE FOLDED (AND INDENTED).
MAX_LEN : CONSTANT INTEGER RANGE 50..150 := 72; -- MAXIMUM
-- OUTPUT LINE LENGTH.
INDENT : CONSTANT INTEGER := TEST_NAME_LEN + 9; -- AMOUNT TO
-- INDENT CONTINUATION LINES.
I : INTEGER := 0; -- CURRENT INDENTATION.
M : INTEGER := MSG'FIRST; -- START OF MESSAGE SLICE.
N : INTEGER; -- END OF MESSAGE SLICE.
```

BEGIN

LOOP

```
IF I + (MSG'LAST-M+1) > MAX_LEN THEN
N := M + (MAX_LEN-I) - 1;
IF MSG (N) /= ' ' THEN
WHILE N >= M AND THEN MSG (N+1) /= ' ' LOOP
N := N - 1;
END LOOP;
IF N < M THEN
N := M + (MAX_LEN-I) - 1;
END IF;
END IF;
ELSE N := MSG'LAST;
END IF;
```

```

        SET COL (STANDARD OUTPUT, COUNT (I+1));
        PUT_LINE (STANDARD_OUTPUT, MSG (M..N));
        I := INDENT;
        M := N + 1;
        WHILE M <= MSG'LAST AND THEN MSG (M) = ' ' LOOP
            M := M + 1;
        END LOOP;
        EXIT WHEN M > MSG'LAST;
    END LOOP;
END PUT_MSG;

```

```

PROCEDURE TEST (NAME : STRING; DESCR : STRING) IS
BEGIN
    TEST_STATUS := PASS;
    IF NAME'LENGTH <= MAX_NAME_LEN THEN
        TEST_NAME_LEN := NAME'LENGTH;
    ELSE TEST_NAME_LEN := MAX_NAME_LEN;
    END IF;
    TEST_NAME (1..TEST_NAME_LEN) :=
        NAME (NAME'FIRST .. NAME'FIRST+TEST_NAME_LEN-1);
    PUT_MSG ("");
    PUT_MSG ("---- " & TEST_NAME (1..TEST_NAME_LEN) & " " &
        DESCR & ".");
END TEST;

```

```

PROCEDURE COMMENT (DESCR : STRING) IS
BEGIN
    PUT_MSG (" - " & TEST_NAME (1..TEST_NAME_LEN) & " " &
        DESCR & ".");
END COMMENT;

```

```

PROCEDURE FAILED (DESCR : STRING) IS
BEGIN
    TEST_STATUS := FAIL;
    PUT_MSG (" * " & TEST_NAME (1..TEST_NAME_LEN) & " " &
        DESCR & ".");
END FAILED;

```

```

PROCEDURE NOT_APPLICABLE (DESCR : STRING) IS
BEGIN
    IF TEST_STATUS = PASS OR TEST_STATUS = ACTION_REQUIRED THEN
        TEST_STATUS := DOES_NOT_APPLY;
    END IF;
    PUT_MSG (" + " & TEST_NAME (1..TEST_NAME_LEN) & " " &
        DESCR & ".");
END NOT_APPLICABLE;

```

```

PROCEDURE SPECIAL_ACTION (DESCR : STRING) IS
BEGIN
    IF TEST_STATUS = PASS THEN
        TEST_STATUS := ACTION_REQUIRED;
    END IF;

```

REPORT Package Body

```

        PUT_MSG ("    ! " & TEST_NAME (1..TEST_NAME_LEN) & " " &
                DESCR & ".");
END SPECIAL_ACTION;

PROCEDURE RESULT IS
BEGIN
    CASE TEST_STATUS IS
    WHEN PASS =>
        PUT_MSG ("==== " & TEST_NAME (1..TEST_NAME_LEN) &
                " PASSED =====.");
    WHEN DOES NOT APPLY =>
        PUT_MSG ("++++ " & TEST_NAME (1..TEST_NAME_LEN) &
                " NOT-APPLICABLE =====.");
    WHEN ACTION REQUIRED =>
        PUT_MSG ("!!!! " & TEST_NAME (1..TEST_NAME_LEN) &
                " TENTATIVELY PASSED !!!!!!!T!!!!T!!!.");
        PUT_MSG ("!!!! " & (1..TEST_NAME_LEN => ' ') &
                " SEE '!' COMMENTS FOR SPECIAL NOTES!!");
    WHEN OTHERS =>
        PUT_MSG ("***** " & TEST_NAME (1..TEST_NAME_LEN) &
                " FAILED *****");
    END CASE;
    TEST_STATUS := FAIL;
    TEST_NAME_LEN := NO_NAME_LENGTH;
    TEST_NAME (1..TEST_NAME_LEN) := NO_NAME;
END RESULT;

FUNCTION IDENT_INT (X : INTEGER) RETURN INTEGER IS
BEGIN
    IF EQUAL (X, X) THEN                -- ALWAYS EQUAL.
        RETURN X;                       -- ALWAYS EXECUTED.
    END IF;
    RETURN 0;                           -- NEVER EXECUTED.
END IDENT_INT;

FUNCTION IDENT_CHAR (X : CHARACTER) RETURN CHARACTER IS
BEGIN
    IF EQUAL (CHARACTER'POS(X), CHARACTER'POS(X)) THEN -- ALWAYS
        RETURN X;                       -- EQUAL.
    END IF;                             -- ALWAYS EXECUTED.
    RETURN '0';                         -- NEVER EXECUTED.
END IDENT_CHAR;

FUNCTION IDENT_BOOL (X : BOOLEAN) RETURN BOOLEAN IS
BEGIN
    IF EQUAL (BOOLEAN'POS(X), BOOLEAN'POS(X)) THEN -- ALWAYS
        RETURN X;                       -- EQUAL.
    END IF;                             -- ALWAYS EXECUTED.
    RETURN FALSE;                      -- NEVER EXECUTED.
END IDENT_BOOL;

```

```

FUNCTION IDENT_STR (X : STRING) RETURN STRING IS
BEGIN
    IF EQUAL (X'LENGTH, X'LENGTH) THEN -- ALWAYS EQUAL.
        RETURN X;                      -- ALWAYS EXECUTED.
    END IF;
    RETURN "";                          -- NEVER EXECUTED.
END IDENT_STR;

FUNCTION EQUAL (X, Y : INTEGER) RETURN BOOLEAN IS
    REC_LIMIT : CONSTANT INTEGER RANGE 1..100 := 3; -- RECURSION
                                                    -- LIMIT.
    Z : BOOLEAN;                                -- RESULT.
BEGIN
    IF X < 0 THEN
        IF Y < 0 THEN
            Z := EQUAL (-X, -Y);
        ELSE Z := FALSE;
        END IF;
    ELSIF X > REC_LIMIT THEN
        Z := EQUAL (REC_LIMIT, Y-X+REC_LIMIT);
    ELSIF X > 0 THEN
        Z := EQUAL (X-1, Y-1);
    ELSE Z := Y = 0;
    END IF;
    RETURN Z;
EXCEPTION
    WHEN OTHERS =>
        RETURN X = Y;
END EQUAL;

FUNCTION LEGAL_FILE_NAME (X : FILE_NUM := 1;
                          NAM : STRING := "")
                          RETURN STRING IS
    SUFFIX : STRING (2..6);
BEGIN
    IF NAM = "" THEN
        SUFFIX := TEST_NAME(3..7);
    ELSE
        SUFFIX := NAM(3..7);
    END IF;

    CASE X IS
        WHEN 1 => RETURN ('X' & SUFFIX);
        WHEN 2 => RETURN ('Y' & SUFFIX);
        WHEN 3 => RETURN ('Z' & SUFFIX);
    END CASE;
END LEGAL_FILE_NAME;

BEGIN

TEST_NAME_LEN := NO_NAME'LENGTH;
TEST_NAME(1..TEST_NAME_LEN) := NO_NAME;

```

REPORT Package Body

END REPORT;

APPENDIX D

Procedure CHECKFILE Body

```
-- CHECK_FILE.ADA

-- THIS IS A PROCEDURE USED BY MANY OF THE CHAPTER 14 TESTS TO CHECK THE
-- CONTENTS OF A TEXT FILE.

-- THIS PROCEDURE ASSUMES THE FILE PARAMETER PASSED TO IT IS AN OPEN
-- TEXT FILE.

-- THE STRING PARAMETER CONTAINS THE CHARACTERS THAT ARE SUPPOSED TO BE
-- IN THE TEXT FILE.  A '#' CHARACTER IS USED IN THE STRING TO DENOTE
-- THE END OF A LINE.  A '@' CHARACTER IS USED TO DENOTE THE END OF A
-- PAGE.  A '%' CHARACTER IS USED TO DENOTE THE END OF THE TEXT FILE.
-- THESE SYMBOLS SHOULD NOT BE USED AS TEXT OUTPUT.

-- SPS 11/30/82
-- JBG 2/3/83

WITH REPORT; USE REPORT;
WITH TEXT_IO; USE TEXT_IO;

PROCEDURE CHECK_FILE (FILE: IN OUT FILE_TYPE; CONTENTS : STRING) IS

    X : CHARACTER;
    COL COUNT : POSITIVE COUNT := 1;
    LINE COUNT : POSITIVE COUNT := 1;
    PAGE COUNT : POSITIVE COUNT := 1;
    TRAILING BLANKS MSG WRITTEN : BOOLEAN := FALSE;
    STOP_PROCESSING : EXCEPTION;

    PROCEDURE CHECK_END_OF_LINE (EXPECT_END_OF_PAGE : BOOLEAN) IS
    BEGIN

-- SKIP OVER ANY TRAILING BLANKS.  AN IMPLEMENTATION CAN LEGALLY
```

Procedure CHECKFILE Body

-- APPEND BLANKS TO THE END OF ANY LINE.

```
WHILE NOT END OF LINE (FILE) LOOP
  GET (FILE, X);
  IF X /= ' ' THEN
    FAILED ("FROM CHECK FILE: END OF LINE EXPECTED - " &
           X & " ENCOUNTERED");
    RAISE STOP_PROCESSING;
  ELSE
    IF NOT TRAILING BLANKS MSG WRITTEN THEN
      COMMENT ("FROM CHECK FILE: " &
              "THIS IMPLEMENTATION PADS " &
              "LINES WITH BLANKS");
      TRAILING_BLANKS_MSG_WRITTEN := TRUE;
    END IF;
  END IF;
END LOOP;

IF LINE COUNT /= LINE (FILE) THEN
  FAILED ("FROM CHECK FILE: " &
         "LINE COUNT INCORRECT - EXPECTED " &
         POSITIVE_COUNT'IMAGE(LINE_COUNT) &
         " GOT FROM FILE " &
         POSITIVE_COUNT'IMAGE(LINE(FILE)));
END IF;
```

-- NOTE: DO NOT SKIP LINE WHEN AT END OF PAGE BECAUSE SKIP LINE WILL
-- ALSO SKIP THE PAGE TERMINATOR. SEE RM 14.3.5 PARAGRAPH 1.

```
IF NOT EXPECT END OF PAGE THEN
  IF END OF PAGE (FILE) THEN
    FAILED ("FROM CHECK FILE: PREMATURE END OF PAGE");
    RAISE STOP_PROCESSING;
  ELSE
    SKIP_LINE (FILE);
    LINE_COUNT := LINE_COUNT + 1;
  END IF;
END IF;
COL COUNT := 1;
END CHECK_END_OF_LINE;
```

PROCEDURE CHECK_END_OF_PAGE IS
BEGIN

```
IF NOT END OF PAGE (FILE) THEN
  FAILED ("FROM CHECK FILE: " &
         "END OF PAGE NOT WHERE EXPECTED");
  RAISE STOP_PROCESSING;
ELSE
  IF PAGE COUNT /= PAGE (FILE) THEN
    FAILED ("FROM CHECK FILE: " &
           "PAGE COUNT INCORRECT - EXPECTED " &
           POSITIVE_COUNT'IMAGE (PAGE_COUNT) &
```

```

                                " GOT FROM FILE " &
                                POSITIVE_COUNT'IMAGE (PAGE(FILE)));
END IF;

SKIP_PAGE (FILE);
PAGE_COUNT := PAGE_COUNT + 1;
LINE_COUNT := 1;
END IF;
END CHECK_END_OF_PAGE;

BEGIN

RESET (FILE, IN_FILE);
SET_LINE_LENGTH (STANDARD_OUTPUT, 0);
SET_PAGE_LENGTH (STANDARD_OUTPUT, 0);

FOR I IN 1 .. CONTENTS'LENGTH LOOP
    BEGIN
        CASE CONTENTS (I) IS
            WHEN '#' =>
                CHECK_END_OF_LINE (CONTENTS (I + 1) = '@');
            WHEN '@' =>
                CHECK_END_OF_PAGE;
            WHEN 'X' =>
                IF NOT END OF FILE (FILE) THEN
                    FAILED ("FROM CHECK FILE: " &
                        "END OF FILE NOT WHERE EXPECTED");
                    RAISE STOP_PROCESSING;
                END IF;
            WHEN OTHERS =>
                IF COL_COUNT /= COL(FILE) THEN
                    FAILED ("FROM CHECK FILE: " &
                        "COL COUNT INCORRECT - " &
                        "EXPECTED " & POSITIVE_COUNT'
                        IMAGE(COL_COUNT) & " GOT FROM " &
                        "FILE " & POSITIVE_COUNT'IMAGE
                        (COL(FILE)));
                END IF;
                GET (FILE, X);
                COL_COUNT := COL_COUNT + 1;
                IF X /= CONTENTS(I) THEN
                    FAILED("FROM CHECK FILE: " &
                        "FILE DOES NOT CONTAIN CORRECT " &
                        "OUTPUT - EXPECTED " & CONTENTS(I)
                        & " - GOT " & X);
                    RAISE STOP_PROCESSING;
                END IF;
        END CASE;
    EXCEPTION
        WHEN STOP_PROCESSING =>
            COMMENT ("FROM CHECK_FILE: " &

```


Procedure CHECKFILE Body

```
                                "LAST CHARACTER IN FOLLOWING STRING " &
                                "REVEALED ERROR: " & CONTENTS (1 .. I));
                                EXIT;
                                END;
                                END LOOP;
EXCEPTION
  WHEN STATUS_ERROR =>
    FAILED ("FROM CHECK FILE: " &
            "STATUS_ERROR RAISED - FILE CHECKING INCOMPLETE");
  WHEN MODE_ERROR =>
    FAILED ("FROM CHECK FILE: " &
            "MODE_ERROR RAISED - FILE CHECKING INCOMPLETE");
  WHEN NAME_ERROR =>
    FAILED ("FROM CHECK FILE: " &
            "NAME_ERROR RAISED - FILE CHECKING INCOMPLETE");
  WHEN USE_ERROR =>
    FAILED ("FROM CHECK FILE: " &
            "USE_ERROR RAISED - FILE CHECKING INCOMPLETE");
  WHEN DEVICE_ERROR =>
    FAILED ("FROM CHECK FILE: " &
            "DEVICE_ERROR RAISED - FILE CHECKING INCOMPLETE");
  WHEN END_ERROR =>
    FAILED ("FROM CHECK FILE: " &
            "END_ERROR RAISED - FILE CHECKING INCOMPLETE");
  WHEN DATA_ERROR =>
    FAILED ("FROM CHECK FILE: " &
            "DATA_ERROR RAISED - FILE CHECKING INCOMPLETE");
  WHEN LAYOUT_ERROR =>
    FAILED ("FROM CHECK FILE: " &
            "LAYOUT_ERROR RAISED - FILE CHECKING INCOMPLETE");
  WHEN OTHERS =>
    FAILED ("FROM CHECK FILE: " &
            "SOME EXCEPTION RAISED - FILE CHECKING INCOMPLETE");
END CHECK_FILE;
```

APPENDIX E

Sample Output Of Acceptance Tests

Sample Output Of Acceptance Tests

Test CZ1101A.ADA should produce the following on STANDARD_OUTPUT:

```
- NO_NAME CZ1101A-AB: CHECK REPORT ROUTINES. CHECKING 'COMMENT'.
- NO_NAME CHECKING 'PUT MSG' FOR PROPER OUTPUT.
- NO_NAME THIS LINE IS EXACTLY 'MAX LEN' LONG. ....5...60....5...70..
- NO_NAME THIS COMMENT HAS A WORD THAT SPANS THE FOLD POINT. THIS
  COMMENT FITS EXACTLY ON TWO LINES. ....5...60....5...70..
- NO_NAME THIS COMMENT HAS A WORD THAT ENDS AT THE FOLD POINT ...70..
  THE SPACES JUST AFTER THE FOLD POINT SHOULD BE GONE.
- NO_NAME THIS COMMENT HAS A WORD THAT BEGINS AT THE FOLD POINT.
  THIS SHOULD BE ON THE SECOND LINE.
- NO_NAME THIS COMMENT HAS SPACES SPANNING THE FOLD POINT. ..5...70
  THIS SHOULD BE ON THE SECOND LINE.
- NO_NAME
  THIS COMMENT IS ONE VERY LONG WORD AND SO IT SHOULD BE S
  PLIT AT THE FOLD POINT.
- NO_NAME CHECKING THAT REPORT BODY INITIALIZES TO 'NO_NAME' AND
  'FAILED'. CHECKING 'RESULT'.
**** NO_NAME FAILED *****.

---- PASS_TEST CHECKING 'TEST' AND 'RESULT' FOR 'PASSED'.
- PASS_TEST CHECKING THAT INDENTATION OF CONTINUATION LINES IS
  ADJUSTED ACCORDING TO TEST NAME LENGTH.
==== PASS TEST PASSED =====.
- NO_NAME CHECKING 'RESULT' FOR RESETING TO 'NO_NAME' AND 'FAILED'.
**** NO_NAME FAILED *****.
- NO_NAME CHECKING THAT INDENTATION OF CONTINUATION LINES IS ADJUSTED
  ACCORDING TO TEST NAME LENGTH.

---- FAIL_TEST CHECKING 'FAILED' AND 'RESULT' FOR 'FAILED'.
* FAIL_TEST CHECKING 'FAILED'. NOW 'RESULT' SHOULD BE 'FAILED'.
**** FAIL_TEST FAILED *****.

---- NA_TEST CHECKING 'NOT APPLICABLE' AND 'RESULT' FOR
  'NOT-APPLICABLE'.
+ NA_TEST CHECKING 'NOT APPLICABLE'. NOW 'RESULT' SHOULD BE
  'NOT-APPLICABLE'.
**** NA_TEST NOT-APPLICABLE *****.

---- FAIL_NA_TEST CHECKING 'FAILED', 'NOT APPLICABLE', AND 'RESULT' FOR
  'FAILED'.
+ FAIL_NA_TEST CHECKING 'NOT APPLICABLE'. NOW 'RESULT' SHOULD BE
  'NOT-APPLICABLE'.
* FAIL_NA_TEST CHECKING 'FAILED'. NOW 'RESULT' SHOULD BE 'FAILED'.
+ FAIL_NA_TEST CHECKING 'NOT APPLICABLE'. NOW 'RESULT' SHOULD STAY
  'FAILED'.
**** FAIL_NA_TEST FAILED *****.
- NO_NAME END CZ1101A.
```

Sample Output Of Acceptance Tests

Test CZ1103A.ADA should produce the following on STANDARD_OUTPUT:

```
---- CZ1103A CHECK THAT PROCEDURE CHECK FILE WORKS.
- CZ1103A BEGIN TEST WITH AN EMPTY FILE.
- CZ1103A BEGIN TEST WITH A FILE WITH BLANK LINES.
- CZ1103A BEGIN TEST WITH A FILE WITH BLANK LINES AND PAGES.
- CZ1103A BEGIN TEST WITH A FILE WITH TRAILING BLANKS.
- CZ1103A FROM CHECK FILE: THIS IMPLEMENTATION PADS LINES WITH
  BLANKS.
- CZ1103A BEGIN TEST WITH A FILE WITHOUT TRAILING BLANKS.
- CZ1103A BEGIN TEST WITH A FILE WITH AN END OF LINE ERROR.
* CZ1103A FROM CHECK FILE: END OF LINE EXPECTED - E ENCOUNTERED.
- CZ1103A FROM CHECK FILE: LAST CHARACTER IN FOLLOWING STRING
  REVEALED ERROR: THIS LINE WILL CONTAIN AN #.
- CZ1103A BEGIN TEST WITH FILE WITH END OF PAGE ERROR.
* CZ1103A FROM CHECK FILE: END OF PAGE NOT WHERE EXPECTED.
- CZ1103A FROM CHECK FILE: LAST CHARACTER IN FOLLOWING STRING
  REVEALED ERROR: THIS LINE WILL CONTAIN AN @.
- CZ1103A BEGIN TEST WITH FILE WITH END OF FILE ERROR.
* CZ1103A FROM CHECK FILE: END OF FILE NOT WHERE EXPECTED.
- CZ1103A FROM CHECK FILE: LAST CHARACTER IN FOLLOWING STRING
  REVEALED ERROR: THIS LINE WILL CONTAIN AN %.
- CZ1103A BEGIN TEST WITH FILE WITH INCORRECT DATA.
* CZ1103A FROM CHECK FILE: FILE DOES NOT CONTAIN CORRECT OUTPUT -
  EXPECTED C - GOT I.
- CZ1103A FROM CHECK FILE: LAST CHARACTER IN FOLLOWING STRING
  REVEALED ERROR: LINE WITH C.
**** CZ1103A FAILED ****
```